KINDRA
Knowledge Inventory for hydrogeology research
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KINDRA DELIVERABLE D4.4

FIRST WORKSHOP WITH THE JOINT PANEL OF EXPERTS

Summary:

This document reports on the first workshop organised with the Joint Panel of Experts of the KINDRA project that took place on the 26th-27th of March 2015. These workshops provide opportunities to improve the outcomes of each work package, and supply the widest reaching opportunities for dialogue and engagement with other networks and a series of stakeholders. In this first workshop an overview was given of the project's objectives and foreseen activities. In depth analyses and discussions focused the development of a methodology framework and the dissemination and communication plan. In this document the agenda of the meeting, participants-list, all presentations and a summary of discussions can be found.

Authors:

Marco Petitta and Gertruud van Leijen, Sapienza University of Rome

Project acronym:	KINDRA
Project title:	Knowledge Inventory for hydrogeology research
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Topic:	WATER-4a-2014
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1. SUMMARY

This document reports on the first workshop organised with the Joint Panel of Experts of the KINDRA project that took place on the 26th-27th of March 2015. These workshops provide opportunities to improve the outcomes of each work package, and supply the widest reaching opportunities for dialogue and engagement with other networks (such as EIP on Water, WssTP) or) and a series of stakeholders. In this first workshop an overview was given of the project's objectives and foreseen activities. In depth analyses and discussions focused WP1 activities concerned with the development of a methodology framework and WP4 activities regarding the dissemination and communication and potential contributions from JPE members to the communication strategy. As far as WP1 concerned firstly the establishment of a harmonised terminology and methodology for classification and reporting hydrogeology-related research in Europe was discussed. Secondly the in-house inventory of information sources was illustrated and a close analyses of the questionnaire that is being developed for this inventory took place. With regard to WP4 opportunities were explored to better communicate and dissemination KINDRA contents and end-user requirements were assessed. Finally results and lessons learnt were summarised and next steps recapitulated.
In this document can be found the agenda of the meeting, participants-list, all presentations and a summary of discussions.

2. PROGRAMME

KINDRA
Knowledge Inventory for hydrogeology research

Agenda of the Rome Workshop, March 26-27, 2015

Thursday March 26

9.00-13.00 Overview on KINDRA and introduction to WP1 actual status and issues

9.00-9.30: Introduction to the KINDRA project: objectives, main activities, key expected results
Marco Petitta, KINDRA project coordinator, Sapienza

9.30-10.00: KINDRA from the perspective of the European Commission, EASME and administrative requirements for Horizon2020 projects
Marie-Christine van Wunnik, EASME PO

10.00-10.30: WP1: Methodology framework development - objectives and foreseen activities
Peter van der Keur, GEUS

10.30-11.00 WP1 task 1.3 Guidance for classification and reporting groundwater researches and task 1.4 EIGR programming - objectives and foreseen activities
Clint García-Alibrandi, REDIAM

11.00-11.30 *Coffee break*

11.30-11.45: WP2 Data collection and processing - objectives and activities
Isabel Fernandez, EFG
11.45-12:00: WP3 Research gaps and recommendations - objectives and activities
Peter van der Keur, GEUS
12.00-12.15: WP5 Project management - objectives, activities, status and results so far achieved
Gertruud van Leijen, consultant SAPIENZA
12.15-13.00 WP1 Initial proposal for a Harmonised Terminology and Methodology
Mariachiara Caschetto, SAPIENZA

13.00-14.00 *Lunch*

14.00-17.30 In-depth discussions on actually faced technical issues

14.00-15.00 Harmonised Terminology and Methodology for classification and reporting hydrogeology-related research in Europe from preliminary, task 1.1
Peter van der Keur, GEUS
15.00-16.00 JPE round table on Terminology and Classification

16.00-16.30 *Coffee break*

16.30-17.00 In-house inventory of information sources, task 1.2
Eva Hartai, EFG
17.00-17.30 JPE contribution to the information sources

Friday March 27

08.30-11.00 Dissemination and communication
08.30-09.00 WP4 Dissemination and communication, including end-user requirements
Adrienn Cseko, LPRC
9.00-10.00 JPE contribution to KINDRA end-user requirements
10.00-10.30 Summary of Agreements/Decisions
10.30-11.00 Recap of results achieved in this workshop, lessons learnt

11.00-11.30 *Coffee Break*

11.30-12.00 Agenda of next steps for JPE involvement during the project
12.00-12.30 Wrap-up
13.00-14.00 Lunch

3. LIST OF PARTICIPANTS

Partners:

Marco Petitta	Universita degli Studi di Roma La Sapienza
Gertruud van Leijen	
Mariachiara Caschetto	
Isabel Fernandez	The European Federation of Geologists
Eva Hartai	
Mercedes García-Padilla	Agencia de Medio Ambiente y Agua de Andalucia
Clint García-Alibrandi	
Adrienn Cseko	La Palma Research Centre for Future Studies SL
Péter Szűcs	Miskolci Egyetem
Viktória Mikita	
Peter van der Keur	Geological Survey of Denmark and Greenland
Maria di Cairano	

JPE Board members

Elisabetta Preziosi	Researcher at CNR-IRSA (National Research Council - Water Research Institute)
Kevin T. Cullen	Consultant Hydrogeologist
Alecos Demetriades	Consultant in Mineral Exploration, Applied Geochemistry and Environmental impact assessment
Georgia Destouni	Professor at the Department of Physical Geography and Environment, Stockholm University
Gesche Grützmacher	OE Wasserversorgung Leiterin Wasserwirtschaft
José Martins Carvalho	General Director of Terra, Ambiente e Recursos Hídricos, Lda (TARH)
Carlos Martinez	Researcher at the Research and Geoscientific Prospective Department, Geological Survey of Spain (IGME)
Teodora Szocs	head of the Department of Hydrogeology, Geological and Geophysical Institute of Hungary (MFGI).
Robert S. Ward	Director of Groundwater Science, British Geological Survey

4. DOCUMENTS PROVIDED TO THE JOINT PANEL OF EXPERTS

Before the workshop, the following documents have been supplied to the members of the Joint Panel of Experts:

1. Abstract document for the Joint Panel of Experts
2. Annex I - Description of the Action Part A of the Grant Agreement

The abstract document is here below reported, the 2nd document can be found in the Grant Agreement.
The abstract document gives an overview of project objectives, list of partners and workpackage overview, a description of the activities planned during the first year of the project, and what is expected from the JPE.

Abstract document for the Joint Panel of Experts

This short document is intended for describing to the Joint Panel of Experts (JPE) the main objectives and instruments of the H2020 project KINDRA.

As you know, practical and scientific knowledge related to hydrogeology research and innovation are scattered amongst various actors in Europe. In this context, our project KINDRA has the aim to create an inventory of this knowledge-base and then use the inventory to identify critical research challenges, in line with the implementation of the WFD and new innovation areas, within integrated water resources management based on the latest research.

Objectives of the project

Along the three years of the project, our goals can be resumed as follow:

1) Create a uniform EU-harmonised categorisation approach/terminology for reporting groundwater research (a Hydrogeological Research Classification System – HRC-SYS). Since such uniform classification does not exist at the moment, ongoing research activities, national/European hydrogeological research activities, agendas and strategies are difficult to report and even more difficult to compare.
2) Carry out EU-wide assessment of existing practical and scientific knowledge (using the developed HRC-SYS) focusing on EU, national, regional, international scientific activities. This assessment will be implemented with the help of national members of the EFG.
3) Create a European Inventory of Groundwater Research and Innovation (EIGR). This register will be supported by a web-service, searchable by selected key-words, which support users with query functions for statistics, diagrams, and others concise data elaboration.
4) Populate with data and mainly metadata the register, with the help of national members of EFG, and use the developed analytical tools (qualitative/quantitative) to assess the performance of key ongoing EU, national, regional, international and EU-third party hydrogeological scientific and innovation activities and results.
5) Compare the results with existing recommendations and position papers on groundwater related research requirements, outcomes of the Projects own workshops on the same issues, recommendations by research and working groups;
6) Define research gaps and corresponding suggestions for research agendas in line with WFD, technology platform recommendations.

7) Deploy the Register as a public-access service, to be used as a permanent, searchable service on ongoing hydrogeological research and innovation in Europe. With regular updates such service could be used to fuel hydrogeology-related research & innovation in Europe and help to avoid overlaps at the same time.

The project, developed by six partners (Sapienza University of Rome, European Federation of Geologists, SME La Palma Research Center, Agencia de Medio Ambiente y Agua de Andalucia, Miskolc University, Geological Survey of Denmark), includes five WPs:
WP1 - Methodology framework development [Months: 1-12]
WP2 - Data collection and processing [Months: 12-24]
WP3 - Research gaps and recommendations [Months: 24-36]
WP4 - Dissemination and communication [Months: 1-36]
WP5 - Project management [Months: 1-36]

First Year activity
The first year is dedicated to the fundamental activity of developing the "instruments" necessary for achieving the expected results. The methodology framework development is the critical step, which requires the maximum collaboration and background analysis. Consequently, we concentrate our attention to the WP1 activities. This is the list of tasks included in WP1:

- Task 1.1: Classification of groundwater R&D results and activities by keywords. In order to have a comprehensive understanding on the groundwater theme, it is necessary to create a “snapshot” of our scientific knowledge covering as many European countries as possible. Such comprehensive coverage will result in an accurate assessment of the state of the art in hydrogeology research in various geographical and geo-environmental settings. The first step is to build a harmonised approach for classifying and reporting the European groundwater researches. This task requires the identification of keywords and categories for an effective and useful classification, allowing the recognition of the pertinence of groundwater related topics in the field of water research. To realize a common terminology, we are reviewing various academic, industrial and research classification schemes to create a hierarchical structure and a selected list of key-words that will be fundamental to identify relationships and intersections between topics, themes and activities. The experience of project partners will be used to draft an initial conceptual framework (keywords, categories, hierarchy). Strong contribution is expected from the Joint Panel of Experts (JPE) for amendments and revision. The terminology and classification will be finalised by Month 6.
- Task 1.2: Simultaneously an inventory of information sources (i.e. results, knowledge improvements, innovation results, advancement in groundwater managament/protection, etc.) related to national and international projects, documents, databases, initiatives, will be prepared, in collaboration with EFG groups and members representative of 23 countries. Each EFG group will provide the list and the databases related to their countries and the central EFG office will organize the materials, checking the correctness of the information and filling in the gaps, including reports and information sources on research activities realized at EU level. The final product of this work will be an in house inventory of information sources on the state of groundwater knowledge, with related databases where

available. A classification of datasets, reports, research results will be carried out, by creating an interface with Task 1.1, to test the reliability of the classification system

- Task 1.3: A guidance for classification and reporting groundwater researches resumes the characteristics of the Hydrogeological Research Classification System – HRC-SYS), to be used for thesubsequent information gathering. In addition to the definition of a harmonised terminology for reporting, a set of indicators will also be developed that will allow the evaluation of the outputs and performance of research activities. The guidance document will summarise the activity of WP1, based on the conclusions raisedby the scientific partners, taking into account recommendation provided by the JPE. The EIGR Guidance Document will also be used during the course of the project and especially for the orientation of EFG Third Party representatives and other experts, who will be involved in the review and compilation of research data under EIGR.
- Task 1.4: The European Inventory of Groundwater Research (EIGR) is expected to contain information for each European country covered by the project, including research&innovation results and knowledge improvements derived from projects directly or indirectly supported by EC. The database will be programmed to expand geographically in a flexible manner to other countries not covered by the project. During the collection of data priority will be given to the most recent results. EIGR programming requires the definition of a common information model, to be developed taking into account the user requirements in liaison with the JPE. The data will be available in many different formats, accessible using many different interfaces (e.g. HTTP GET, OGC WFS) and using different semantics (e.g. INSPIRE Data Specifications). We expect that some of this information will be available, accessible and usable at least partly through services implementing relevant INSPIRE catalogue and download services. The following minimum components will be implemented for EIGR: a Data Catalogue containing metadata, Definition of ETL tools (Extract, Transform and Load), Functions (query functions for data evaluation and the production of statistics, diagrams,…), Web Services: WMS, WFS, WCS, CSW, etc., Viewer. and Regulation. Metadata will need to be checked for format, completeness, validity and logical consistency as well as positional accuracy. As a final step the pilot implementation of database and services for the EIGR will be carried out by the Consortium partners by means of test-runs and pilot implementations of increasing difficulty and complexity.

Milestones

Along the project, there are four milestones which resume our deadlines:

MS1: Harmonised framework established (Month 12). Harmonised terminology approved by JPE. EIGR completed and pilot-tested. Progress evaluated and approved by the EC;

MS2: Knowledge baseline established (Month 24): National workshops organised, country reports are all submitted and approved by the PSC, information has been gathered from all countries covered;

MS3: Knowledge baseline evaluated (Month 30): Research gaps identification workshop properly organised, workshop report is available and approved by PSC;

MS4 Recommendations formulated (month 36). Project objectives are reached as confirmed by JPE, PSC and the European Commission.

What we expect from JPE

The role of JPE is stated in the project as follow:

The Joint Panel of Experts will provide scientific support for the project. In addition to representing their home institutions the activity of the panel members extends to a wide range of international organisations. In addition to providing scientific support, a key mission of the Panel will be to assist with reaching out to the project's stakeholder communities. In doing so Panel members will utilise their professional contact network for disseminating information about KINDRA, and will also advise project members about the best forms of dissemination/communication methods towards these communities. Members of the Panel are outstanding representatives of the project's Stakeholders and as such they are in an excellent position to provide advice on the most efficient dissemination routes and represent Stakeholder interest in KINDRA at the same time.

In other words, we ask your help to:

- act as Advisory Board along the project, providing input to the discussion, raising questions/criticisms about the methodological approach, suggesting improvements to the technical results of the project;

- approve the main results of the projects, as described by the Milestones, with particular references to the harmonised terminology (WP1) and all the project objectives;

- assist us in preparing the Hydrogeological Research Classification System – HRC-SYS and in populating the European Inventory of Groundwater Research (EIGR), by giving us information about existing classifications, sources, reports, etc., to be considered relevant for our goals;

- promote dissemination of our project, by suggesting forms of dissemination/communication in your scientific, technical and social communities, by supporting our initiatives (e.g. national workshops), by enhancing contacts with stakeholders, associations, structures dealing with water and groundwater issues;

- participate in our events; you will be invited to the scheduled three main workshops with JPE (the first one in Rome at Month 3, the second one at Month 18 and the third one at Month 30), but you will be informed about other initiatives and your participation is welcome.

Of course, other forms of collaboration are possible and surely will enhance the impact of the project, and we can discuss further initiatives during the first workshop.

5. PRESENTATION OF THE PROJECT

Project leader Marco Petitta welcomed the participants, thanked his staff and all partners for the work performed to prepare this workshop and the JPE members for their engagement. He invited everybody to give a short introduction about him/herself. Also Prof. Gabriele Scarascia Mugnozza, head of Department of Earth Science at Sapienza University of Rome came to greet the participant and wished them a fruitful workshop. Thereafter the project was presented in a series of interventions, that were followed up in the morning with short questions and comments, and in the afternoon alternated with round table discussions on specific issues actually under the attention of the partnership.
These discussions were followed-up after the workshop in a vivid email exchange with JPE members, resulting in some of the deliverables submitted in the months April and May 2015.

Here below all presentations are reproduced in a chronological WP order. In the following chapter main issues raised following the presentations are shortly outlined. In chapter 7 the round table discussions are reported.

Knowledge Inventory for hydrogeology research

KINDRA – 642047

Call: H2020-WATER-2014-one-stage

Type of action: CSA

INTRODUCTORY NOTES

Rome Workshop, Thursday March 26

SAPIENZA
UNIVERSITÀ DI ROMA

Marco Petitta
Mariachiara Caschetto

Dipartimento di Scienze della Terra

Project partners

SAPIENZA UNIVERSITÀ DI ROMA

FÉDÉRATION EUROPÉENNE DES GEOLOGUES
EUROPEAN FEDERATION OF GEOLOGISTS
FEDERACIÓN EUROPEA DE GEÓLOGOS

MISKOLCI EGYETEM
UNIVERSITY OF MISKOLC

GEUS

JUNTA DE ANDALUCIA
REGIONAL MINISTRY OF AGRICULTURE, FISHERIES AND ENVIRONMENT

CENTRO FUTURO

including:
- A Joint Panel of Expert (10 members)
- 20 third parties (associations acting as national members of EFG network)

Aims of the project

To create an inventory of GW knowledge-base and then use the inventory to identify critical research challenges, in line with the implementation of the WFD and new innovation areas within integrated water resources management based on the latest research.

✓ Create a uniform EU-harmonised categorisation approach / terminology for reporting groundwater research (a Hydrogeological Research Classification System – HRC-SYS).
✓ Carry out EU-wide assessment of existing practical and scientific knowledge (using the developed HRC-SYS) focusing on EU, national, regional, international and EU-third party scientific activities
✓ Create a European Inventory of Groundwater Research and Innovation (EIGR). This register will be supported by a web-service that will be searchable by selected key-words and will support users with query functions for statistics, diagrams, and others concise data elaboration.
✓ Use the data in the register and the developed analytical tools (qualitative/quantitative) to assess the performance of key ongoing EU, national, regional, international and EU-third party hydrogeological scientific and innovation activities and results.
✓ Compare the results with existing recommendations and position papers, outcomes of past Projects workshops, recommendations by the EIP on Water /WssTP
✓ Define research gaps and corresponding suggestions for research agendas in line with WFD
✓ Deploy the Register as a public-access service, to be used as a permanent, searchable service on ongoing hydrogeological research and innovation

Project structure

WP4 - Dissemination and communication (LPRC)

Dissemination and management

Dissemination and support services

Leveraging dissemination and dialogue

WP1 - Methodology framework development (SAPIENZA)

harmonised framework for reporting hydrogeology-related research and innovation (programmes, projects, results, agendas, etc) in Europe:

-Hydrogeological Research Classification System – HRC – SYS

-European Inventory of Groundwater Research- EIGR

→

WP2 - Data collection and processing (EFG)

EU- wide assessment of existing practical and scientific knowledge on hydrogeology-related research and innovation in Europe:

- National workshops on Hydrogeology
- Data collection and processing
- country reports

→

WP3 - Research gaps and recommendations (GEUS)

Identify research gaps in hydrogeology research that have relevance for the implementation of the Water Framework and Groundwater Directives (WFD and GWD)

-Hydrogeology research evaluated

-Research gaps identified

-Recommendations formulated

WP5 - Project management (SAPIENZA)

Quality Assurance and Risk Management

Project Coordination

Project management

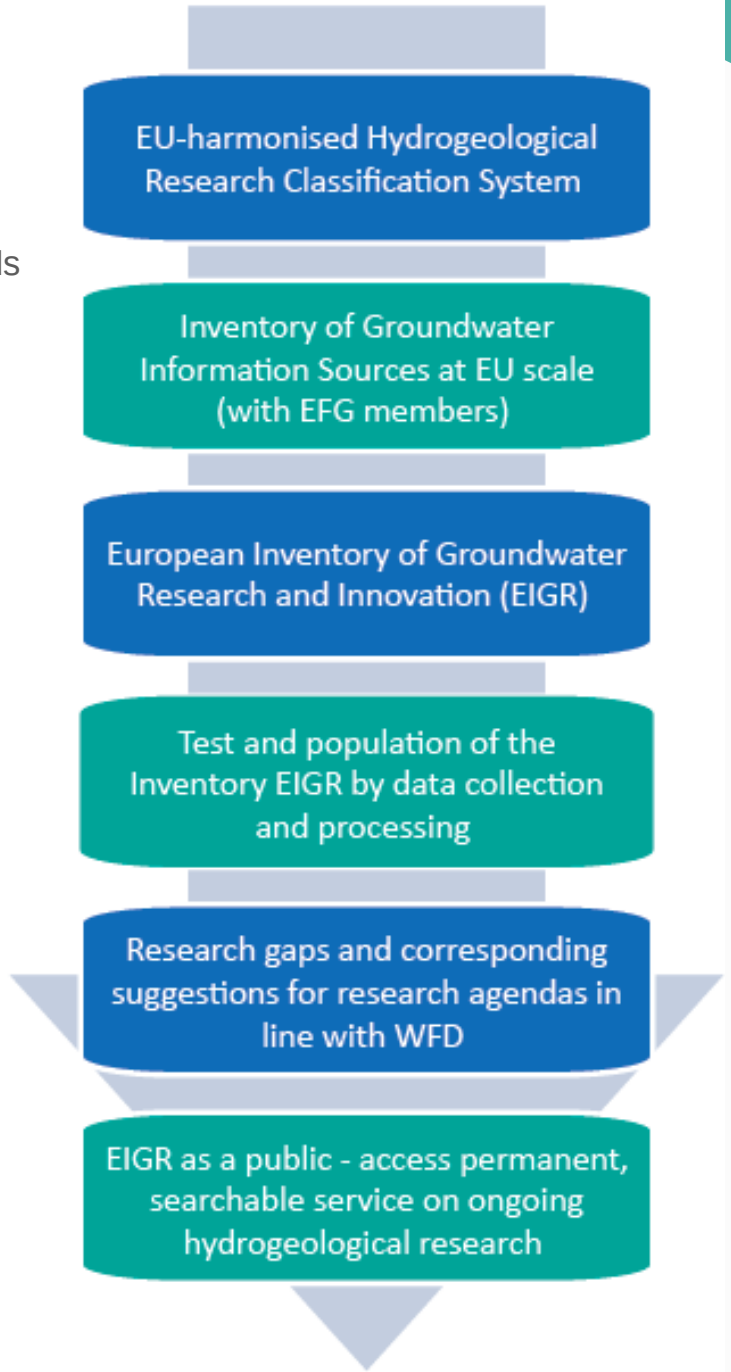
Exploitation of results and IPR

Vision of the project

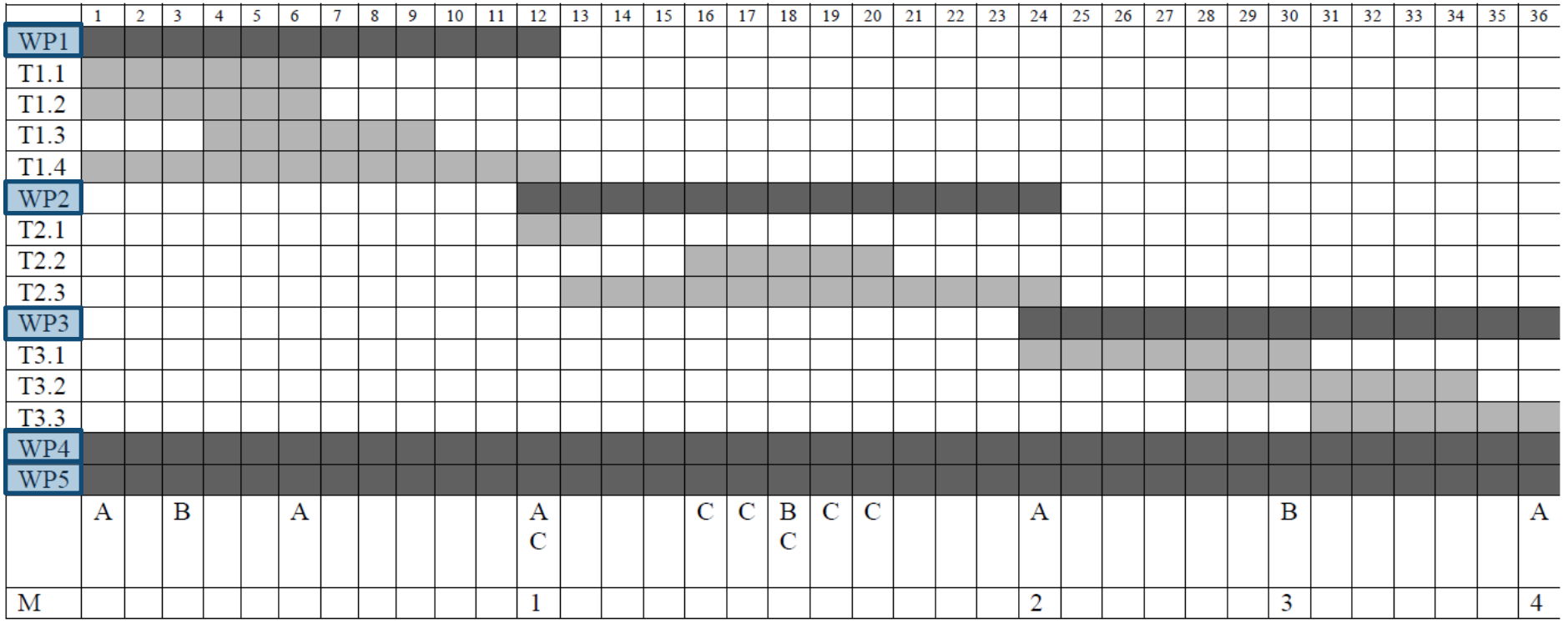
- From the state of the art to research and knowledge gaps and trends
- Our inventory will include research RESULTS, not a research list
- Keywords and a classification system have to be selected
- Obtained data in the register can be analysed and evaluated using developed analytical tools

Who can help us?

Classification	• Joint Panel of Experts
Inventory	• 20 third parties (national representatives of EFG network)
Dissemination	• EFG dissemination capacity • Collaboration with JPE, CIS WG-C, IAH, WssTP, ICT4water cluster, etc.



Gantt chart



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Meetings:
A: Consortium Meeting
B: Workshop with the involvement of the JPE
C: Other workshop

Milestones:
M1: Harmonised framework established
M2: Knowledge baseline established
M3: Knowledge baseline evaluated
M4: Recommendations formulated

Milestones

Milestone number [18]	Milestone title	WP number [9]	Lead beneficiary	Due Date (in months) [17]	Means of verification
MS1	Harmonised framework established	WP1	1 - SAPIENZA	12	Harmonised terminology approved by JPE. EIGR completed and pilot-tested. Progress evaluated and approved by the EC
MS2	Knowledge baseline established	WP2	2 - FEDERATION EUROPEENNE DES GEOLOGUES	24	National workshops organised, country reports are all submitted and approved by the PSC, information has been gathered from all countries covered
MS3	Knowledge baseline evaluated	WP3	6 - GEUS	30	Research gaps identification workshop properly organised, workshop report is available and approved by PSC
MS4	Recommendations formulated	WP3	6 - GEUS	36	Project objectives are reached as confirmed by JPE, PSC and the European Commission

WP1 - Methodology framework development

Tasks

1.1 Classification of groundwater R&D results and activities by keywords (SAPIENZA, GEUS, UM).

1.2 Inventory of information sources (SAPIENZA, EFG).

1.3 Guidance for classification and reporting groundwater researches (GEUS, SAPIENZA, UM, EFG, LPRC, REDIAM).

1.4 EIGR programming (REDIAM, LPRC).
Parallel with the implementation of Tasks1-3 a common information model will be defined, and the user requirements will be specified in liaison with the JPE.

1.5 Delimitation of activities.
Results obtained by Task 1.1 and Task 1.2 will be analyzed to focusing the following activities on the definition of the specific groundwater-related aspects that are relevant to the implementation of the Water Framework Directive and the Groundwater Directive.

Deliverables

D1.1 Initial Proposal for a Harmonised Terminology and Methodology. **(M3)**

D1.3 EIGR Guidance Document. **(M9)**

D1.4 In house-inventory of information sources **(M9)**

D1.2 HRCSYS - Harmonised Terminology and Methodology for classification and reporting hydrogeology-related research in Europe. **(M6)**

D1.3 EIGR Guidance Document **(M9)**

D1.5 European Inventory of Groundwater Research / EIGR demo (Alpha) version. **(M9)**

D1.6 European Inventory of Groundwater Research / EIGR final (beta) version. **(M12)**

D1.7 Selection of groundwater-related aspects relevant for implementation of WFD and GWD. **(M12)**

WP2 - Data collection and processing

Tasks	Deliverables
2.1 Orientation workshop for national EFG representatives (EFG, SAPIENZA).	**D2.1** Orientation workshop for national EFG representatives. **(M12)**
2.2 National Workshops on Hydrogeology (EFG, SAPIENZA).	**D2.2** National Workshops on Hydrogeology **(M16-20)**
2.3 Data collection and processing (REDIAM, EFG, UM SAPIENZA, GEUS, LPRC)	**D2.3** Country Reports **(M24)** **D2.4** EIGR Datasheets and functionality report **(M24)**

WP3 - Research gaps and recommendations

Tasks	Deliverables
3.1 Hydrogeology research evaluation (GEUS, REDIAM, SAPIENZA) will foresee the assessment of data (Country reports and the Inventory) using the developed analytical tools (qualitative/quantitative) of the Inventory.	→ **D3.1** Draft synthesis of country reports.**(M28)**
3.2 Research gaps (GEUS, SAPIENZA, EFG, LPRC, UM) will be identified with the help of the JPE on the basis of a harmonised knowledge-pool collected from all across Europe and on the basis of identified research priorities.	→ **D3.2** Final workshop of the project. **(M30)** **D3.3** Report on the identified gaps in research and innovation. **(M33)**
3.3 Recommendations (GEUS, EFG, SAPIENZA). The identified research gaps will be converted into specific recommendations for the further development of policies and (EU-level) research programmes.	→ **D3.4** Recommendations .**(M36)**

WP4 - Dissemination and communication

Tasks	Deliverables
4.1 Dissemination management (LPRC, EFG). At an early stage of the project a communication plan will be developed and presented to the consortium for approval.	**D4.1** Kickoff meeting **D4.2** Dissemination and communication plan **(M2)** **D4.5** Uniform project image **(M3)**
4.2 Dissemination support services (LPRC, ALL PARTNERS).	**D4.3** Project website **(M1: basic, M3: fully functional)** **D4.6** Project brochure issue 1 **(M4)** **D4.8** Project brochure issue 2 **(M12)** **D4.10** Project brochure issue 3 **(M24)** **D4.13** Scientific papers and publications. Scientific publications will be realized all along the project (36 months)
4.3 Leveraging dissemination and dialogue (LPRC, ALL PARTNERS).	**D4.1** Kickoff meeting **D4.4** First Workshop with the JPE **(M3)** **D4.7** Report on End-user requirement **(M6)** **D4.9** Second Workshop with JPE **(M18)** **D4.11** Third Workshop with the JPE **(M30)** **D4.12** Report on the implementation of public outreach **(M36)** **D4.13** Scientific papers and publications. Scientific publications will be realized all along the project (36 months)

WP4 - Dissemination tools and strategy

- ✓Project website and project logo (available)
- ✓Conferences and brochures (first in April 2015 at CIS-WG C and EGU meeting)
- ✓Workshops with Joint Panel of Experts (exploring other dissemination ways)
- ✓Stakeholder Analysis by a Survey (with EFG)
- ✓Continuous assessment monitoring of end-user interest
- ✓Social Media Networks: accounts activated
- ✓„Did you know?" leaflets: every 6 months (first in June 2015)
- ✓External two press releases distributed through the EFG network
- ✓EFG and IAH communities reached by their newsletters



European Federation of Geologists, EFG, dissemination capacity tools:

- GeoNews newsletter, European Geologist Journal, Social media, two European conferences per year, National Members communication channels, 20 dedicated national workshops during the project period

total reach: more than 55.000 geoscientists in Europe

WP4 – First brochure (to be approved during the workshop)

The "water" topic represents a key-aspect of the modern society: water is not only necessary for human, biological and environmental requirements, but it is one basic "engine" of several interconnected research topics, as exemplified by the water-food-energy-climate nexus. Groundwater represents the "hidden" part of the water cycle, difficult to evaluate, communicate and appreciate, although it sustains the health of both humans and ecosystems as well as industrial and agricultural production. The KINDRA project intends to achieve a comprehensive understanding on the groundwater theme, by creating a "snapshot" of our scientific knowledge covering European Countries.

KINDRA (Knowledge Inventory for hidrogeology research, Grant Agreement No. 642047) is a project funded by the *European Commission's HORIZON2020 Framework Programme, call WATER-4a-2014 - Coordination and Support Action*

The KINDRA Partnership:

Project Coordinator: - Università Degli Studi di Roma la Sapienza, ITALY

EFG - Fédération Européenne Des Geologues, FRANCE

REDIAM - Agencia de Medio Ambiente y Agua de Andalucía, SPAIN

LPRC - La Palma Research Centre for Future Studies S.L., SPAIN

UM - Miskolci Egyetem, Faculty of Earth Science and Engineering, HUNGARY

GEUS - Geological Survey of Denmark and Greenland, DENMARK

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WP4 – First brochure (to be approved during the workshop)

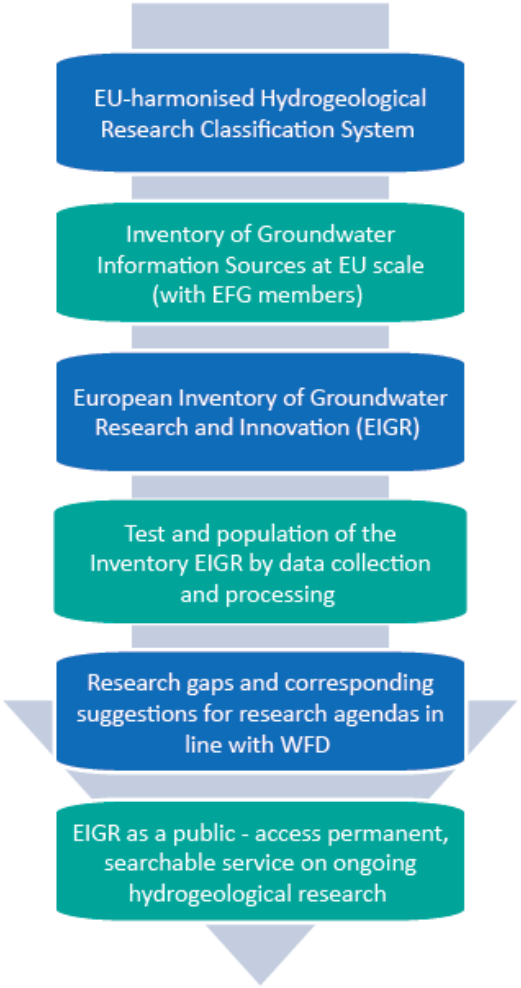
KINDRA www.kindraproject.eu

Objective

Classification and inventory of groundwater researches

Practical and scientific knowledge related to hydrogeology research and innovation are scattered amongst various actors in Europe. The overall objective of KINDRA is to create an inventory of this groundwater knowledge-base, to be implemented following a new harmonized research classification system (HRC-SYS). It requires an accurate assessment of the state of the art in hydrogeology research in various geographical and geo-environmental settings, allowing for direct comparison and the exploitation of synergies.

This inventory will be implemented in a database (EIGR) on groundwater research results, activities, projects and programmes, deemed essential for the identification of the state-of-the-art, future perspectives, critical challenges and research gaps, allowing at EU scale the correct management and policy development of groundwater resources, in line with the implementation of the WFD. Based on the HRC-SYS, the Database EIGR will thus be deployed as a public-access service, to be used as a permanent, searchable database on ongoing hydrogeological research in Europe.



KINDRA www.kindraproject.eu

Dissemination

Make groundwater visible

Communicate groundwater importance is our priority, taking into account different audiences, represented by the technical and scientific community, the wide water stakeholder category and the general public. The involvement of the technical community is guaranteed by the European Federation of Geologists (EFG), whose national members are active collaborating along the project by a bi-directional approach, with the help of the Joint Panel of Expert, and collaboration with EU groundwater associations and working groups. Strategies for engaging stakeholders include differentiated and targeted communication approaches. Finally, public outreach activities will convert technical contents into materials for disseminating groundwater importance to the general public.

WP4 - Dissemination synergies

✓ Synergies are the focus of KINDRA

✓ Our network is available for interacting with other groups, for dissemination and common initiatives (joint workshops, shared non-technical documents, etc.)

✓ Other Water4a projects are: WIDEST, WaterInnEU, FREEWAT and BlueSCities; 10 previous « water » FP7 projects are federated in the ICT4water cluster

✓ At the moment a common google calendar has been established

✓ We are interested to have contacts with stakeholders, EIP water action groups, SPI researches, water networks (as WssTP), SME representatives, etc.

✓ Knowing the results of past and on-going project on groundwater is necessary for us to build a successfull project

✓ We are looking for information to help us to build and populate our inventory: archives, monitoring databases, guidance and best practice documents, etc.

WP5 – Project management

Tasks	Deliverables
5.1 Quality Assurance and Risk Management (SAPIENZA)	**D5.1** Quality Assurance Plan **(M3)**
5.2 Project Coordination (SAPIENZA). This task concerns coordination and management of the administrative matters arising, also providing administrative support to all partners, advising each of the partners in all the administrative aspects related to H2020 legal and administrative consulting, changes, modifications in the partner data, third parties, declaration of costs etc.	**D5.2** Final Plan for the exploitation of results **(M36)** **D5.3** Data Management Plan **(M36)** **D5.4** Minutes of project meetings This activity will be continuously updated along the project **(M36)**
5.3 Project management (SAPIENZA, ALL PARTNERS) It will be the Partner's responsibility to deliver data, results and other contribution as agreed during the development of the proposal concept.	**D5.3** Data Management Plan **(M36)**
5.4 Exploitation of results and IPR (EFG, ALL Partners) The developed Inventory must be kept operational after the EC-funded period, with regular data updates and also occasional updates of the system itself.	**D5.2** Final Plan for the exploitation of results **(M36)**

JPE role (and our expectations)

The Joint Panel of Experts will provide scientific support for the project, as to:

- ✓act as Advisory Board along the project, providing input to the discussion, raising questions/criticisms about the methodological approach, suggesting improvements to the technical results of the project;
- ✓ approve the main results of the project, described by the Milestones, with particular references to WP1 and all project objectives;
- ✓ assist us in preparing the Hydrogeological Research Classification System – HRC-SYS and in populating the European Inventory of Groundwater Research (EIGR), by giving us information about existing classifications, sources, reports, etc., to be considered relevant for our goals;
- ✓ promote dissemination of our project, by suggesting forms of dissemination and communication in the scientific, technical and social communities, by supporting our initiatives (e.g. national workshops) and by enhancing contacts with stakeholders, associations, structures dealing with gw issues;
- ✓participate in our events; you will be invited to the scheduled three main JPE workshops, but your attendance is recommended at other official meetings

Preliminary list of groups/networks to be contacted

- IAH
- CIS WG C Groundwater
- ICT4water cluster http://ict4water.eu/
- EIP water partnership & marketplace (Action Groups) http://www.eip-water.eu/
- water JPI http://www.waterjpi.eu/
- Smart Cities http://www.smart-cities.eu/
- JRC water https://ec.europa.eu/jrc/en/research-topic/water
- EGU Hydrological sciences division
- H2020 WATER4A projects (5 projects: FREEWAT, WIDEST, WaterInnEU, BlueSCities)
- other FP7, LIFE+, other EU projects?
- to be completed…. suggestions?

Next meetings and deadlines interesting for JPE

- This workshop: first leaflet, questionnaire for inventory of information sources
- April/July 2015: classification development, involvement of stakeholders, end-user requirements, dissemination (networking)
- June 2015: final methodology for classification
- September 2015: guidance document for EIGR
- November 2015: orientation workshop for third parties, Brussels
- December 2015: inventory will be ready for testing, 2nd brochure
- April/August 2016: national workshops
- June 2016: 2nd JPE workshop
- Dec 2016/Feb 2017: country reports and inventory populated, 3rd brochure
- June 2017: 3rd JPE workshop (gaps)
- December 2017: final results, end of the project
- Electronic meetings and will be scheduled all along the project

Thanks for coming

Have a nice day!

European Commission

EASME

Executive Agency for Small and Medium-sized Enterprises

KINDRA – project meeting

Marie-Christine VAN WUNNIK

Rome, 26 March 2015

Executive Agency for SMEs

Content

1. *EASME*
2. *KINDRA*
3. *Communication*
4. *Q&A*

Executive Agency for SMEs

EASME

1. EASME

- *Main characteristics*
- *Objectives*
- *Role in H2020/SC5*

1. EASME

2. KINDRA

- *Main characteristics*
- *Topic WATER-4a-2014*
- *Important aspects*

2. KINDRA

Main characteristics

- *Call:H2020-WATER-2014-one-stage*
- *Type of Action: CSA*
- *Acronym: KINDRA (642047)*
- *Duration:36 months*
- *Start Date:01-01-2015*
- *Estimated Project Cost: €1,119,338.00*
- *Requested EU Contribution: €1,119,338.00*

2. KINDRA

Topic WATER-4a-2014

- *to take stock of existing knowledge and identifying research gaps;*
- *to promote the dissemination and exploitation of EU funded research;*
- *to foster knowledge sharing (among different actors);*
- *to promote wider applicability of water innovation for several sectors such as industry, agriculture, policy makers and citizens.*

2. KINDRA

Important aspects

- *focusing on research results*
- *linkages with WFD and GWD*
- *end-user involvement*
- *inter-operability/building on/linking with existing systems (e.g. EIP water) – welcome active participation of coordinator in recent workshops*

3. Communication

- *Article 38 – Promoting the action – Visibility of EU funding*
- *"Before engaging in a communication activity expected to have a major media impact, the beneficiaries must inform the Agency"*

4. Communication

38.1.2 Information on EU funding - use of EU emblem

a) *EU emblem: High-resolution emblems can be found here http://europa.eu/about-eu/basic-information/symbols/flag/*

b) *The following text: "This project has received funding from the [European Union's Horizon 2020 research and innovation programme][Euratom research and training programme 2014-2018] under grant agreement No [number]."*

3. Communication

- *"Communicating EU Research & Innovation - Guidance for project participants - "*
- *http://ec.europa.eu/research/participants/data/ref/h2020/other/gm/h2020-guide-comm_en.pdf*

Communicating EU research and innovation guidance for project participants

Version 1.0
25 September 2014

Disclaimer:
This document is aimed at assisting applicants and beneficiaries for Horizon 2020 funding. Its purpose is to explain the Horizon 2020 framework programme and the procedures to be followed. Please note that the final version of this document is still under discussion and may still change.

Research and Innovation

Thank you for your attention!

Questions?

Find out more:

http://ec.europa.eu/research/participants/portal/doc/call/h2020/h2020-cs2-cfp01-2014-01/1635115-h2020-model_ga_en.pdf

Knowledge Inventory for hydrogeology research

KINDRA – 642047

Call: H2020-WATER-2014-one-stage

Type of action: CSA

WP1: METHODOLOGY FRAMEWORK DEVELOPMENT

Rome Workshop, Thursday March 26

WP1 Methodology framework Development: an overview

WP1 - Methodology framework development

The aim is to create an harmonised framework for reporting hydrogeology-related research and innovation (programmes, projects, results, agendas, etc) in Europe, by these steps:

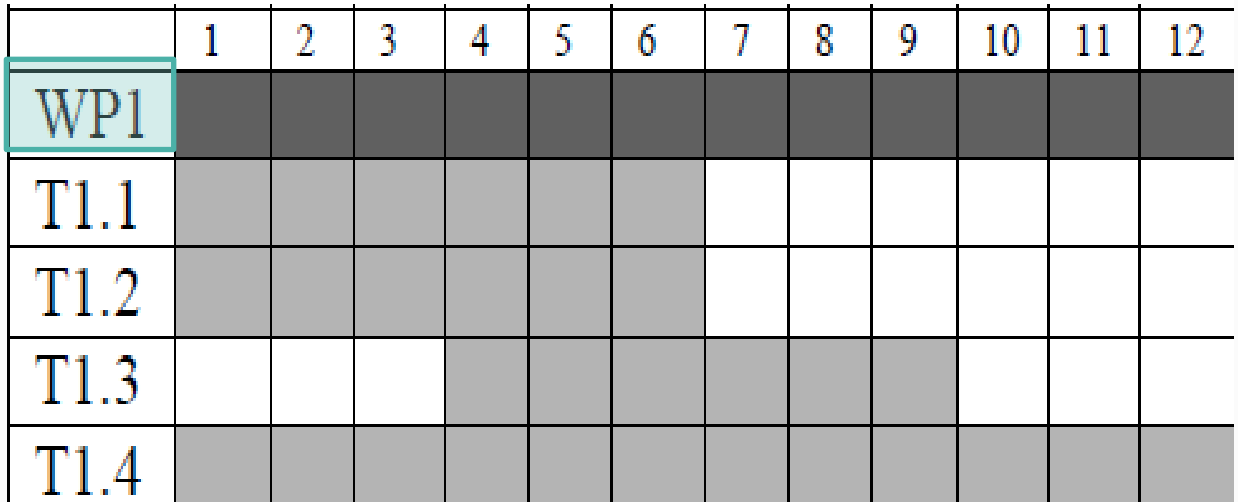
-T1.1: Hydrogeological Research Classification System – HRC – SYS

-T1.2 : European Inventory of Groundwater Research- EIGR

-T1.3: Guidance for classification and reporting groundwater researches

-T1.4: EIGR programming

-T1.5: Delimitation of activities (not in the Gantt diagram)



Tasks

1.1 Classification of groundwater R&D results and activities by keywords (SAPIENZA, GEUS, UM).

1.2 Inventory of information sources (SAPIENZA, EFG).

1.3 Guidance for classification and reporting groundwater research (GEUS, SAPIENZA, UM, EFG, LPRC, REDIAM).

1.4 EIGR programming (REDIAM, LPRC).
Parallel with the implementation of Tasks1-3 a common information model will be defined, and the user requirements will be specified in liaison with the JPE.

1.5 Delimitation of activities.
Results obtained by Task 1.1 and Task 1.2 will be analyzed to focusing the following activities on the definition of the specific groundwater-related aspects that are relevant to the implementation of the Water Framework Directive and the Groundwater directive.

Deliverables

D1.1 Initial Proposal for a Harmonised Terminology and Methodology. **(M3)**

D1.3 EIGR Guidance Document. **(M9)**

D1.4 In house-inventory of information sources **(M9)**

D1.2 HRCSYS - Harmonised Terminology and Methodology for classification and reporting hydrogeology-related research in Europe. **(M6)**

D1.3 EIGR Guidance Document **(M9)**

D1.5 European Inventory of Groundwater Research / EIGR demo (Alpha) version. **(M9)**

D1.6 European Inventory of Groundwater Research / EIGR final (beta) version. **(M12)**

D1.7 Selection of groundwater-related aspects relevant for implementation of WFD and GWD. **(M12)**

Task 1.1 - Classification of groundwater R&D results and activities by keywords (SAPIENZA, GEUS, UM) : M3-M9

-Accurate assessment of the **state of the art** in hydrogeology research in various geographical and geo-environmental settings, allowing for direct comparison and the exploitation of synergies.

- The first step is to build a **harmonised approach** for classifying and reporting the European groundwater researches. This task requires the identification of keywords and categories for an effective and useful classification, allowing the recognition of the pertinence of groundwater related topics in the field of general water research.

- Create a hierarchical structure and a **selected list of key-words** that will be fundamental to identify relationships and intersections between topics, themes and activities. The partners will draft an initial conceptual framework (keywords, categories, hierarchy). Strong contribution is expected from **the Joint Panel of Experts** (JPE) for amendments and revision. (6 months)

- The final product will be the structure of the **European Inventory of Groundwater Research** (EIGR), which will be populated during WP2 with information for each European country covered by the project partners (in particular EFG), to be expanded to other countries.

- We expect to categorize about **one hundred searchable** parameters (Member State names, use of groundwater, relationship with protected areas and environmental/ecological preservation, geochemical compounds and pollutants threshold values, River Basin Body and Groundwater Body of pertinence, etc.).

-It is difficult to preview how many initiatives will be included in the EIGR, to be updated with time over the project. A very preliminary estimation suggests the order of a **thousand** records, including significant categories describing the results of public and private research projects, obtained also from published scientific papers. Exact amount will be defined in Task 1.2.

Task 1.2 - Inventory of information sources (SAPIENZA, EFG) – M9

- Simultaneously with the Task 1.1, **an inventory of information sources** (i.e. results, knowledge improvements, innovation results, advancement in groundwater management/protection, etc.) related to national and international projects, documents, databases, initiatives, will be prepared, in collaboration with EFG groups and members representative of 23 countries.

- Each **EFG group** will provide the list and basic information about the topics related to their countries (using a template to be prepared by EFG and UM) and the central **EFG office** will organize the materials, checking the correctness of the information and filling in the gaps, including reports and information sources on research activities realized at EU level.

- The final product of this work will be an **in house inventory** of information sources on the state of groundwater knowledge, to be filled during WP2 with results and databases where available.

- A classification of datasets, reports, research results will be carried out, by **creating an interface with Task 1.1**, with the aim of:

- i) **pre-examining information** to be processed by WP2;

- ii) verifying the **reliability of the classification system** provided by Task 1.1 to be modified or reformulated according with research inventory.

Task 1.3 - Guidance for classification and reporting groundwater researches (GEUS, SAPIENZA, UM, EFG, LPRC, REDIAM) – M6-M9

- A uniform EU-harmonised categorisation approach / terminology for reporting groundwater research (a **Hydrogeological Research Classification System** – HRC-SYS) will be created as a guidance document for the subsequent information gathering., by a strong coordination activity

- At the final stage of this activity, the results of the previous tasks 1.1 and 1.2 will be used to provide an **EIGR guidance document** for future classification and reporting groundwater research and innovation activities and results (D1.3).

-In addition to the definition of a harmonised terminology for reporting, **a set of indicators** will also be developed that will allow the evaluation of the outputs and performance of research activities.

- A **preliminary list includes**: funding received or invested (in EUR), Technology Readiness Level (TRL) and/or Manufacturing Readiness Level (MRL), number of patents received, publications in refereed journals and their relative citations, follow up projects (also linked to other records in EIGR by their record number), awards received, etc.

-This guidance can be **adopted by EU technical groups** and/or single states authorities. The guidance document will summarise the activity of WP1

-The EIGR Guidance Document will also be used during the course of the project and especially for the **orientation of EFG Third Party representatives** and other experts, who will be involved in the review and compilation of research data under EIGR that are relevant to the implementation of the Water Framework Directive and the Groundwater Directive.

Task 1.4 - EIGR programming (REDIAM, LPRC) – M9-M12

- Parallel with the implementation of Tasks1-3 a **common information model** will be defined, and the user requirements will be specified, to proceed with the detailed analyses of the specifications of relevant EU and national datasources (data, reports, services) to be collected.

-The **data will be available** in many different formats, accessible using many different interfaces (e.g. HTTP GET, OGC WFS) and using different semantics (e.g. INSPIRE Data Specifications). Some of this information will be available, accessible and usable at least partly through services implementing relevant INSPIRE catalogue and download services.

- Other pieces of information will be **collected and processed** from studies and reports in WP2, in this case it will be important to make sure that data is processed in a compatible format.

-The **following minimum components** will be implemented for EIGR:

1. **Data Catalogue**. This “distributed catalogue” (by Geonetwork, where Data Providers can create and modify their own metadata) must allow for searching, consulting and downloading the European hydrogeological information which has been collected and stored.
2. **Definition of ETL tools** (Extract, Transform and Load),
3. **Functions** (query functions for data evaluation and the production of statistics, diagrams,…)
4. **Web Services**: WMS, WFS, WCS, CSW, etc.,
5. **Viewer.** Client application that allows viewing Web Services by different users.,
6. **Regulation** (set of rules, standards and guidelines to organize and structure information as well as the Geoportal).

Task 1.5 – Delimitation of Activities (GEUS, SAPIENZA, UM) – M12

- Results obtained by Task 1.1 and Task 1.2 will be analyzed to focusing the following activities on the definition of the specific groundwater-related aspects that are relevant to the **implementation of the Water Framework Directive and the Groundwater directive.**

-From the obtained classification and list of results, included in the European inventory of groundwater research (EIGR), an evaluation will be made to highlight the results, topics, and keywords which are **considered relevant at EU policy level.**

-To perform this activity, reports and documents realized from the technical bodies of the EC, as the CIS Working Groups, **will be compared with the EIGR structure and content**, and a limited list of significant results will be selected (D1.7)

KINDRA

Knowledge Inventory for hydrogeology research

Rome JPE Workshop, Thursday March 26

WP1 – Task 1.1 (Sapienza, GEUS, Uni. Miskolc)

Initial proposal for a Harmonised Terminology and Methodology

Marco Petitta
Mariachiara Caschetto

Dipartimento di Scienze della Terra

WP1 – Task 1.1 (Sapienza, GEUS, Univ. Miskolc)

"This task requires the identification of keywords and categories for an effective and useful classification, allowing the recognition of the pertinence of groundwater related topics in the field of general water research. To realize a common terminology, we are **reviewing various academic, industrial and research classification schemes** to create a hierarchical structure and a selected list of key-words that will be fundamental to identify relationships and intersections between topics, themes and activities."

Task 1.1

CLASSIFICATION

TERMINOLOGY IDENTIFICATION

- Try to identify in related research projects **methodological approaches** that could be useful to our scope
- Consolidate the identification of research gaps taking stock of **existing knowledge,** taking into account the implementation needs of WFD

By reviewing the main research and technology developments on water management, focusing on the results of projects under the FP6 and FP7 programmes, but also of other European programmes

- FPs several EU-funded projects suggested in KINDRA proposal (GABARDINE, GENESIS, RISK-BASE, WADE, CIRCE, BRIDGE, AQUATERRA, AQUAREHAB, WATERDISS 2.0)

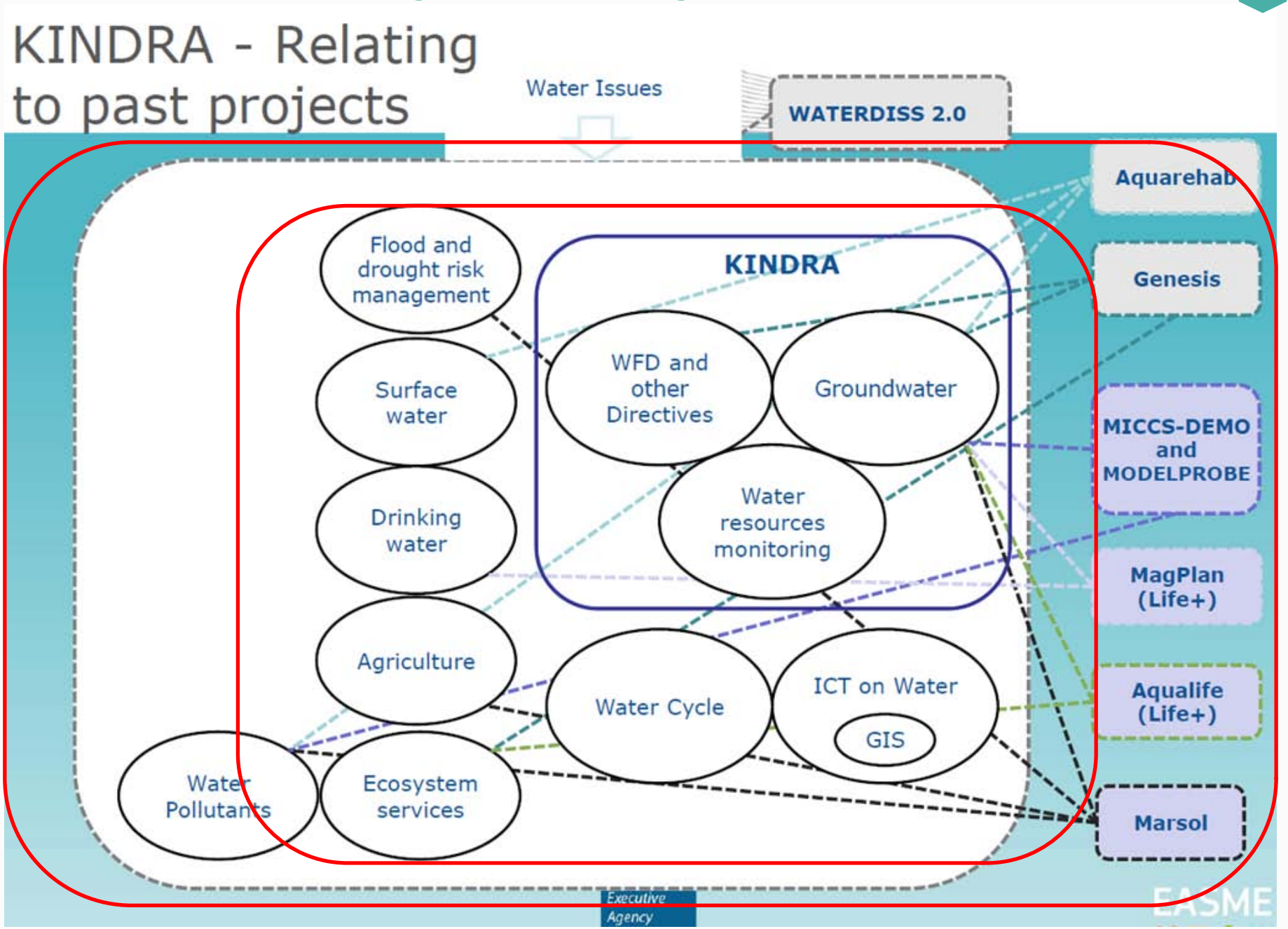
- Projects databases:

http://www.wise-rtd.info/en
http://cordis.europa.eu/home_en.html
http://ec.europa.eu/environment/eco-innovation/discover/programme/index_en.htm
https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp

- Environmental agencies/institutions (reports & guidelines)

http://www.eea.europa.eu/
http://www.epa.gov/
http://www.ewa-online.eu/

From Easme meeting, João Wang de Abreu



ICT-Water cluster Projects

DAIAD - real-time high granularity water monitoring & knowledge extraction

EFFINET - advanced metering, user demand profiles, fault detection and predictive control techniques

ICeWater - infrastructure for smart metering and real-time monitoring

ISS-EWATUS - awareness of water consumption via social media platform

iWIDGET - water consumption patterns and demand forecasting

SmartH2O - behavioural data via smart meters and an online social participation application

UrbanWater - advanced metering, real-time communication of consumption, adaptive pricing

WATERNOMICS - demand response and open business models through personalized water data

WISDOM - improved resource efficiency and business operations by ICT

WatERP - open standards management platform for water supply distribution chains

LIFE programme (2006/2014)

LIFE CLEANSED - Innovative integrated methodology for the use of decontaminated river sediments in plant nursing and road building

WARBO - Water re-born - artificial recharge: innovative technologies for the sustainable management of water resources

MY FAVOURITE RIVER - Sustainable use of and identification with the River Neckar in co-operative governance (national, municipal and regional level)

CLEANWATER - Integrated system for protect and analyse the status and trends of water threatened by nitrogen pollution

WATER - Strengthening the scientific foundation of water quality programs

MAGPlan - Management plan to prevent threats from point sources on the good chemical status of groundwater in urban areas

Sus Treat - Use of immanent energy for sludge treatment - a central step towards self-sustaining sewage flow management

LIFE programme (2006/2014)

WATLIFE - Enhancement of Public Awareness of the Importance of Water for Life, its Protection and Sustainable Use in Accordance with the Water Framework Directive

WALPHY - Design of a decision tool for hydromorphological restoration of water bodies in Walloon Region

WATER CHANGE - Medium and long term water resources modelling as a tool for planning and global change adaptation. Application to the Llobregat Basin.

SEMEAU - Application of the Water Framework Directive through the implementation of an expert system providing a total modelling of a water mass

TRUST - Tool for regional - scale assessment of groundwater storage improvement in adaptation to climate change (TRUST)

M^3 - Application of integrative modelling and monitoring approaches for river basin management evaluation

INCOME - Improved management of contaminated aquifers by integration of source tracking, monitoring tools and decision strategies

AQUALIFE- Development of an innovative and user-friendly indicator system for biodiversity in groundwater dependent Ecosystems

WORTHY OF NOTE

- The SPI-Water cluster three EC FP7 projects dealing with Science-Policy Interfacing in Water management: **STREAM, WaterDiss2.0 and STEP-WISE**

  STREAM intends to tackle the issue water research awareness gap by bringing water technologies to the interest of those that seek implementation.

- **HAIR-**HArmonized environmental Indicators for pesticide Risk (FP6)

- **WatERP** - open standards management platform for water supply distribution chains (FP7)

  WatERP will develop a web-based “Open Management Platform” (OMP) supported by real-time knowledge on water supply and demand, enabling the entire water distribution system to be viewed in an integrated and customized way.

  Information will be stored in a Water Data Warehouse making use of semantics and common language and open standards (such as WaterML 2.0) which will be defined in the ontology developed to ensure interoperability and maximize usability.

Identification of three main categories

TOPICS

BASIC KNOWLEDGE

THEORETICAL ADVANCEMENTS

INSTRUMENTS AND TOOLS

POLLUTION AND REMEDIATION

VULNERABILITY/PROTECTION

THRESHOLDS & BACKGROUNDS
E-FLOWS AND GDE

SW-GW INTERACTIONS

WATER SCARCITY AND DROUGHT

Etc.

TOPICS:
are branches (or main keywords) of hydrogeology

THEMES

FOOD

HEALTH

INDUSTRY

ENERGY

CLIMATE

AGRICOLTURE

ENVIRONMENT

ECOSYSTEMS & ECOSERVICES

URBAN AREAS & SMART CITIES

Etc.

THEMES:
are social themes and they express pressures (but not only pressures)

ACTIVITIES

GROUNDWATER BODIES CHARACTERIZATION

GW BUDGETS

MONITORING

GUIDELINES & BEST PRACTICES

QUALITY ASSESSMENT

MODELING

POLICY AND GOVERNANCE

REGIONAL STUDIES

CONCEPTUAL MODELS

Etc.

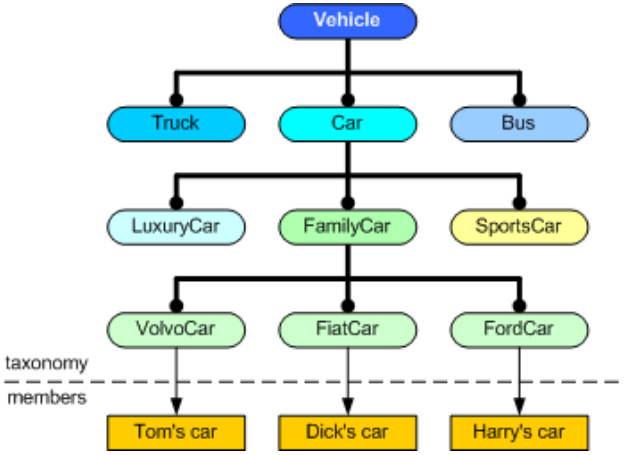
ACTIVITIES:
are evaluations and decisions

How do we combine these three categories?

a) Matrices

PROBABILITY LEVEL	SEVERITY CATEGORY			
	I CATASTROPHIC	II CRITICAL	III MARGINAL	IV NEGLIGIBLE
(A) Frequent	1 (IA)	3 (IIA)	7 (IIIA)	13 (IVA)
(B) Probable	2 (IB)	5 (IIB)	9 (IIIB)	16 (IVB)
(C) Occasional	4 (IC)	6 (IIC)	11 (IIIC)	18 (IVC)
(D) Remote	8 (ID)	10 (IID)	14 (IIID)	19 (IVD)
(E) Improbable	12 (IE)	15 (IIE)	17 (IIIE)	20 (IVE)

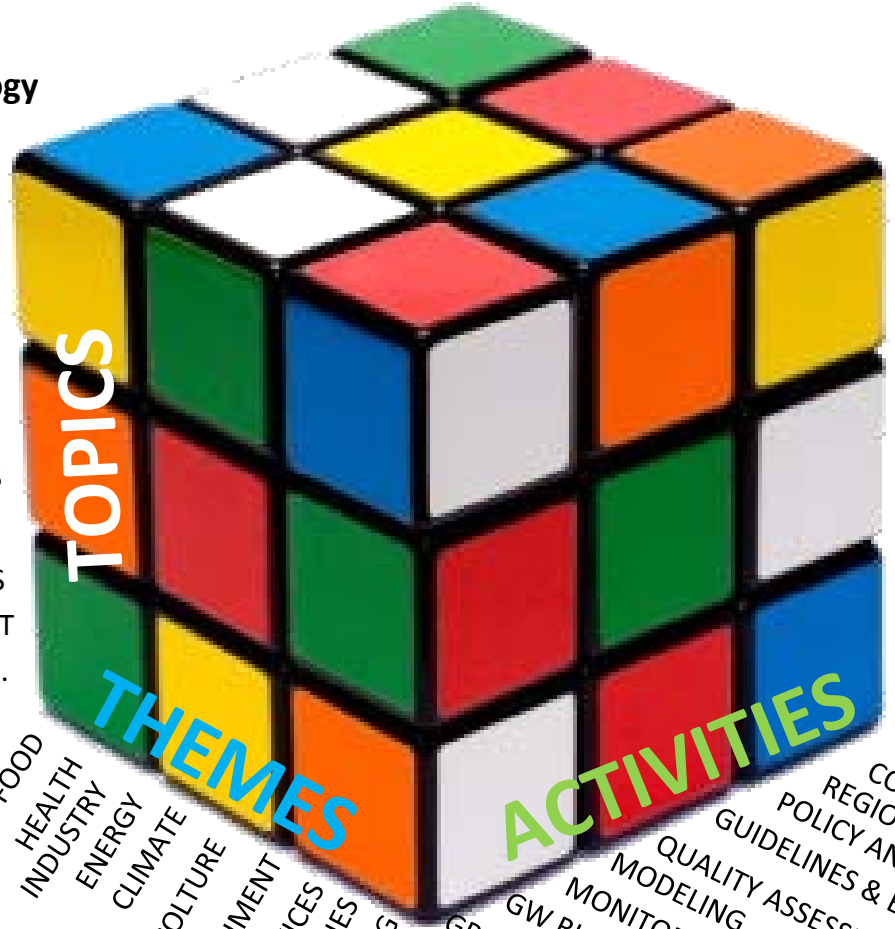
b) tree-organized groups



c) 3D organization

A 3D proposal for building the Classification

TOPICS:
are branches (or main keywords) of hydrogeology



Relationships between keywords (and their relative importance/occurrence) can be found crossing three main categories: TOPICS, THEMES and ACTIVITIES

KEYWORDS can be tree-organised to be grouped in one of the three categories

THEMES:
are social themes and they express pressures (but not only pressures)

ACTIVITIES:
are evaluations and decisions

Thanks for coming

Have a nice day!

KINDRA

Knowledge Inventory for hydrogeology research

Rome JPE Workshop, Thursday March 26

WP1 – Task 1.1 (GEUS, Uni. Miskolc)

Maria Di Cairano
Viktoria Mikita
Peter Szucs
Klaus Hinsby
Peter van der Keur

WP1, Task 1.1

- **Outline**
  - Identification of keywords from WFD, GWD and scientific journals
  - Search of Keywords through Web of Science and Google Scholar
  - Analyses
  - Results

WP1 – Task 1.1 (Sapienza, GEUS, Univ. Miskolc)

"Task 1.1 requires the identification of keywords and categories for an effective and useful classification, allowing the recognition of the pertinence of groundwater related topics in the field of general water research. To realize a common terminology, we are **reviewing various academic, industrial and research classification schemes** to create a hierarchical structure and a selected list of key-words that will be fundamental to identify relationships and intersections between topics, themes and activities."

- Identify in related research **methodological approaches** that could be useful to our scope
- Consolidate the identification of research gaps taking stock of **existing knowledge,** taking into account the implementation needs of WFD & GWD

Methodology (1/2)

- **Identification of relevant keywords from WFD, GWD and Blueprint documents**
- **Research of keywords using Web of Sciences (including search statistics):**

TS=Groundwater
TS=Groundwater AND keyword = AD: Country of author affiliation
TS=Groundwater AND keyword = TEXT: country for which keyword appears

Search for keywords in 'abstract' and 'keywords indication'
Note: TS=Searc Term, AD=Affiliation address of authors; time period=2006-2015

- **Research of keywords using Google Scholar** (including reports, book chapters etc)**:**

- **Bibliography of the 5 most cited papers with "AD" and the 5 most cited papers in "text"**
- **Time period 2006-2015**

Methodology (2/2)

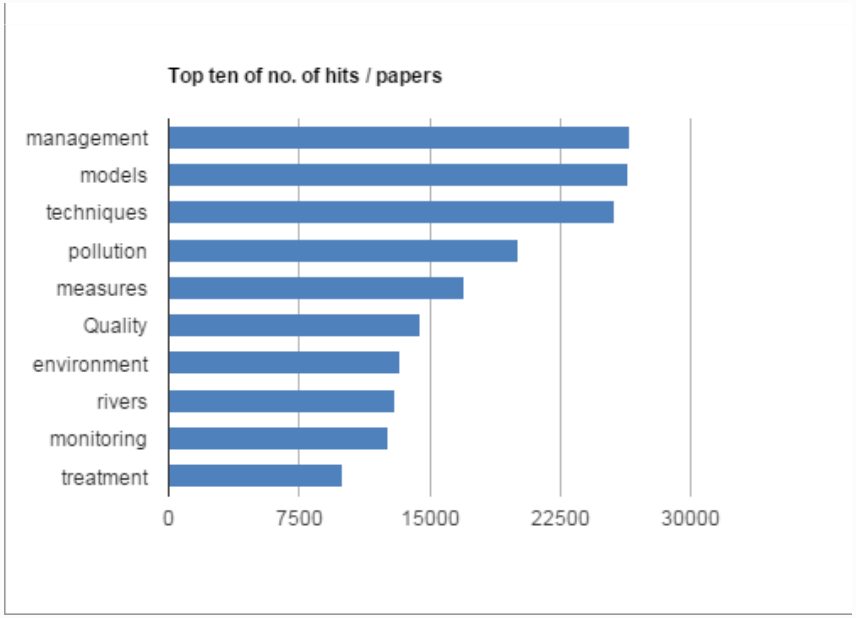
- **Analyses of the number of hits found with the searches:**
  - **Sorting of keywords by (WoS):**
    - *Total number of papers*
    - *Total citations*
    - *average citations*
    - *H-index*
    - *Highest citations*

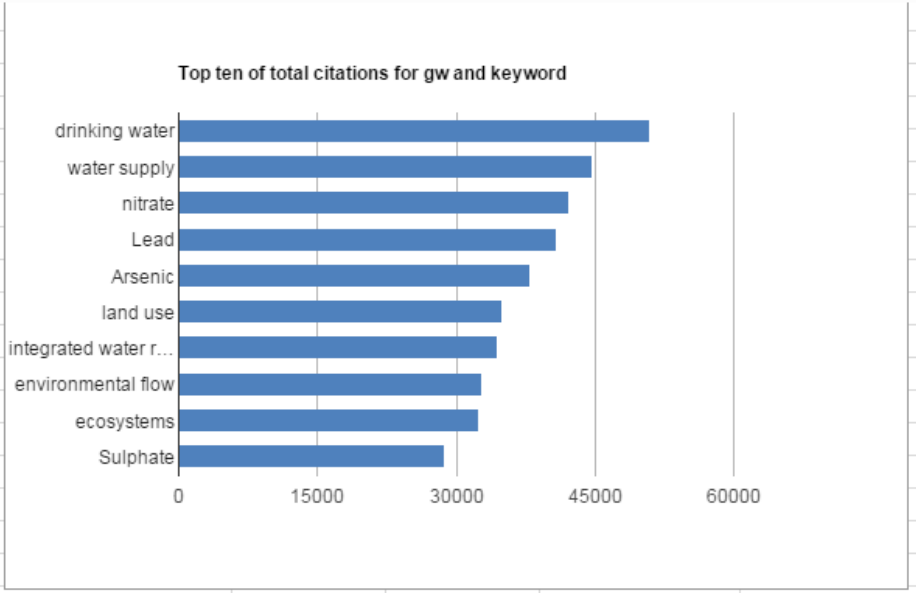
- **Results:**
  - **Graphical display in diagrams**
  - **Organization of keywords in Topics, Themes, Activities**

Identification (1/2)

Identification of important keywords:

Identifying and ranking the most important gw keywords in the WFD and GWD by the use of Web of Science search engine:

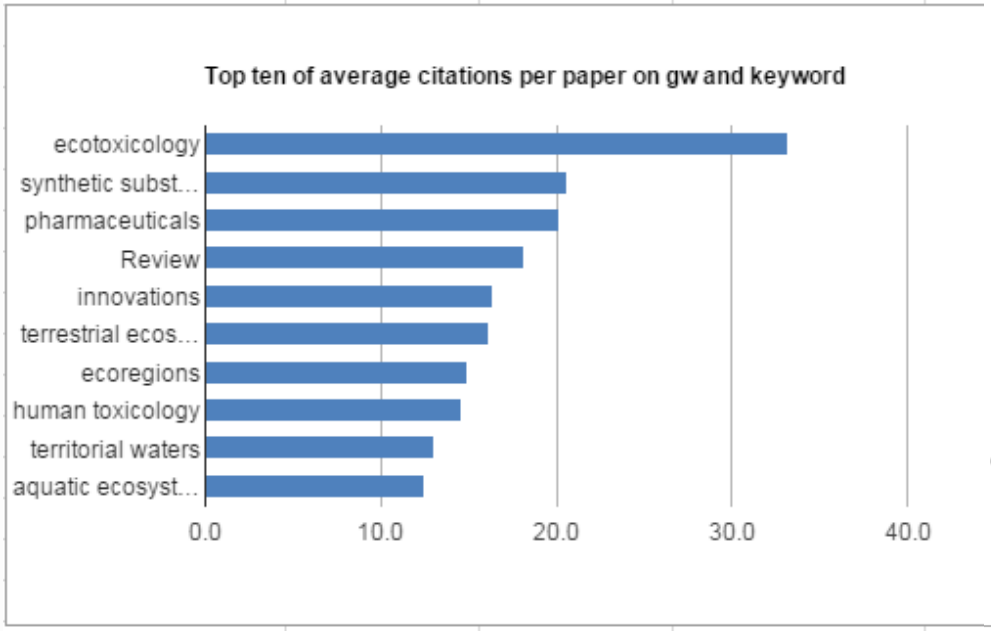


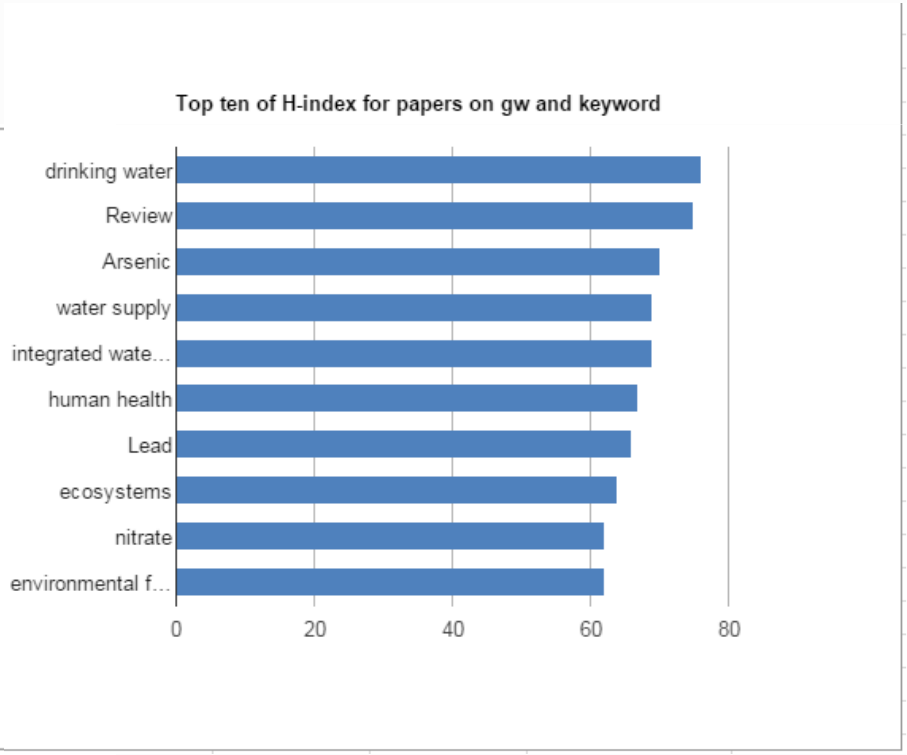


Identification (2/2)

Identification of important keywords:

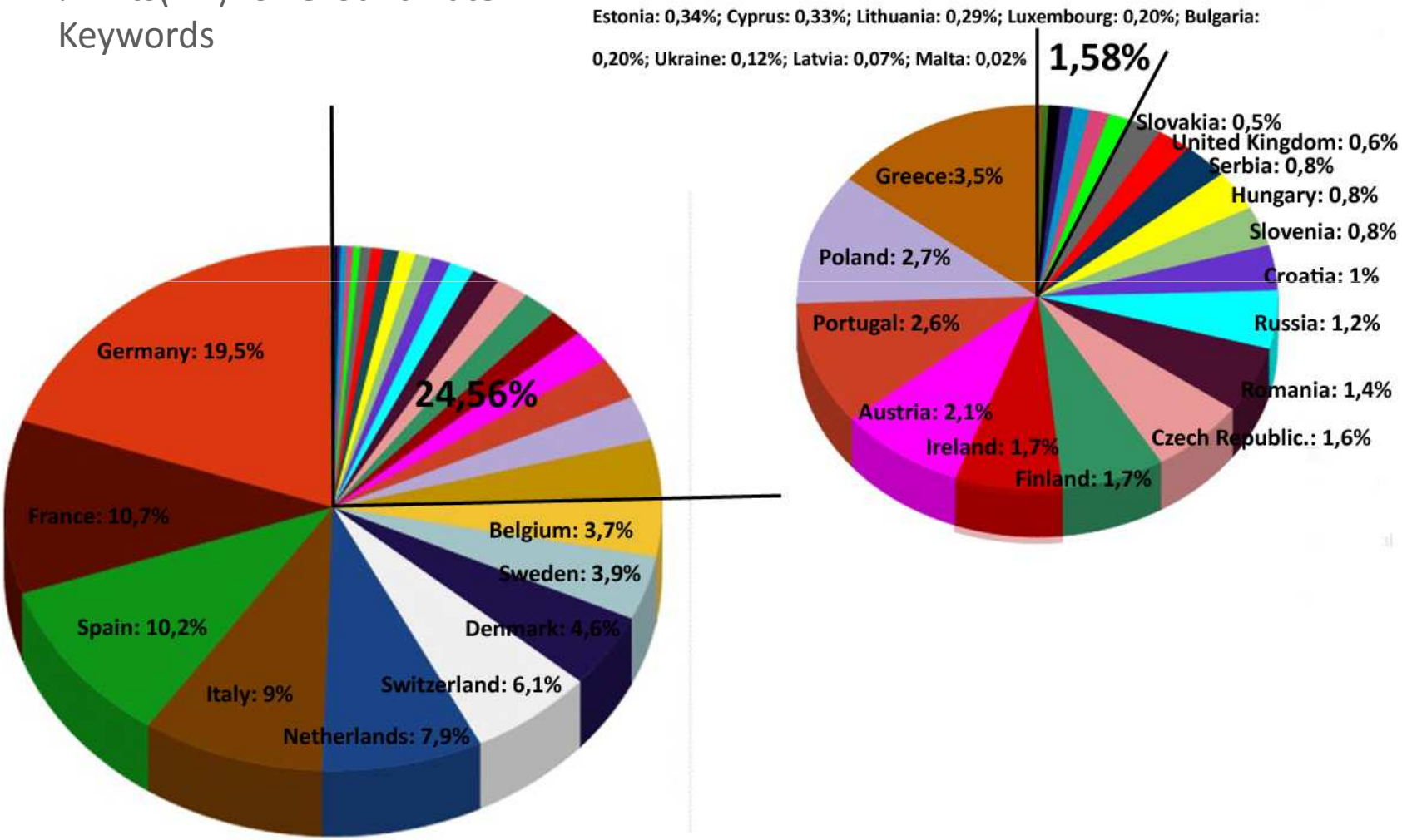
Identifying and ranking the most important gw keywords in the WFD and GWD by the use of Web of Science:





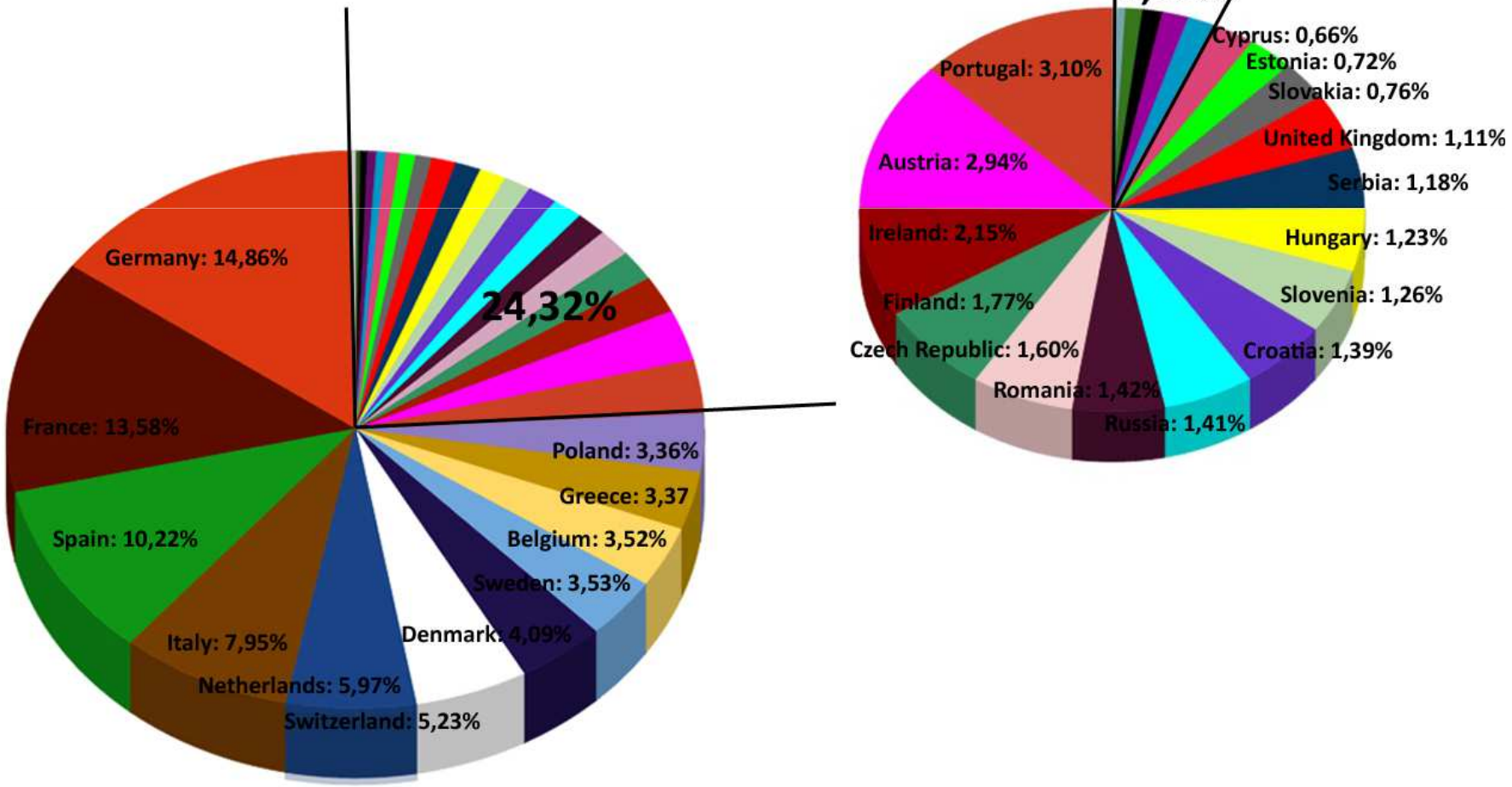
Diagrams (1/4)

% Hits(AD) for Groundwater Keywords

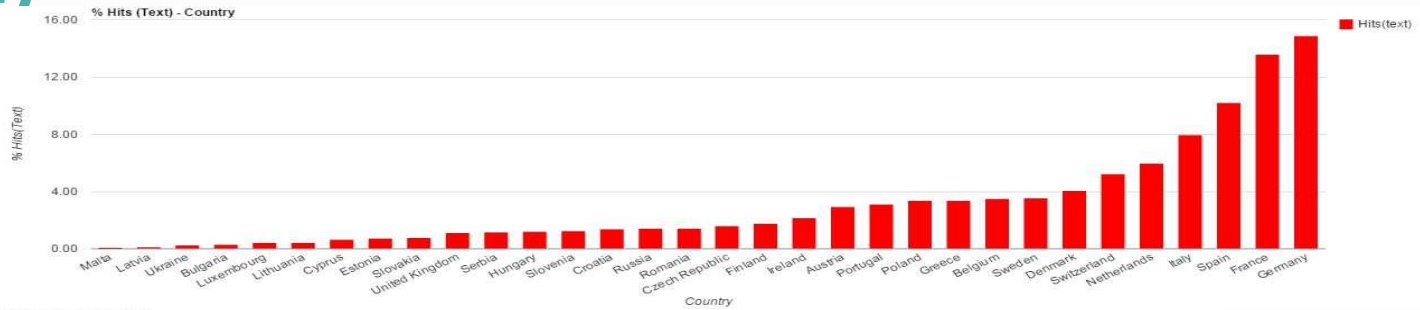


Diagrams (2/4)

% hits(Text) for Groundwater Keywords



Diagrams (3/4)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Czech Republic
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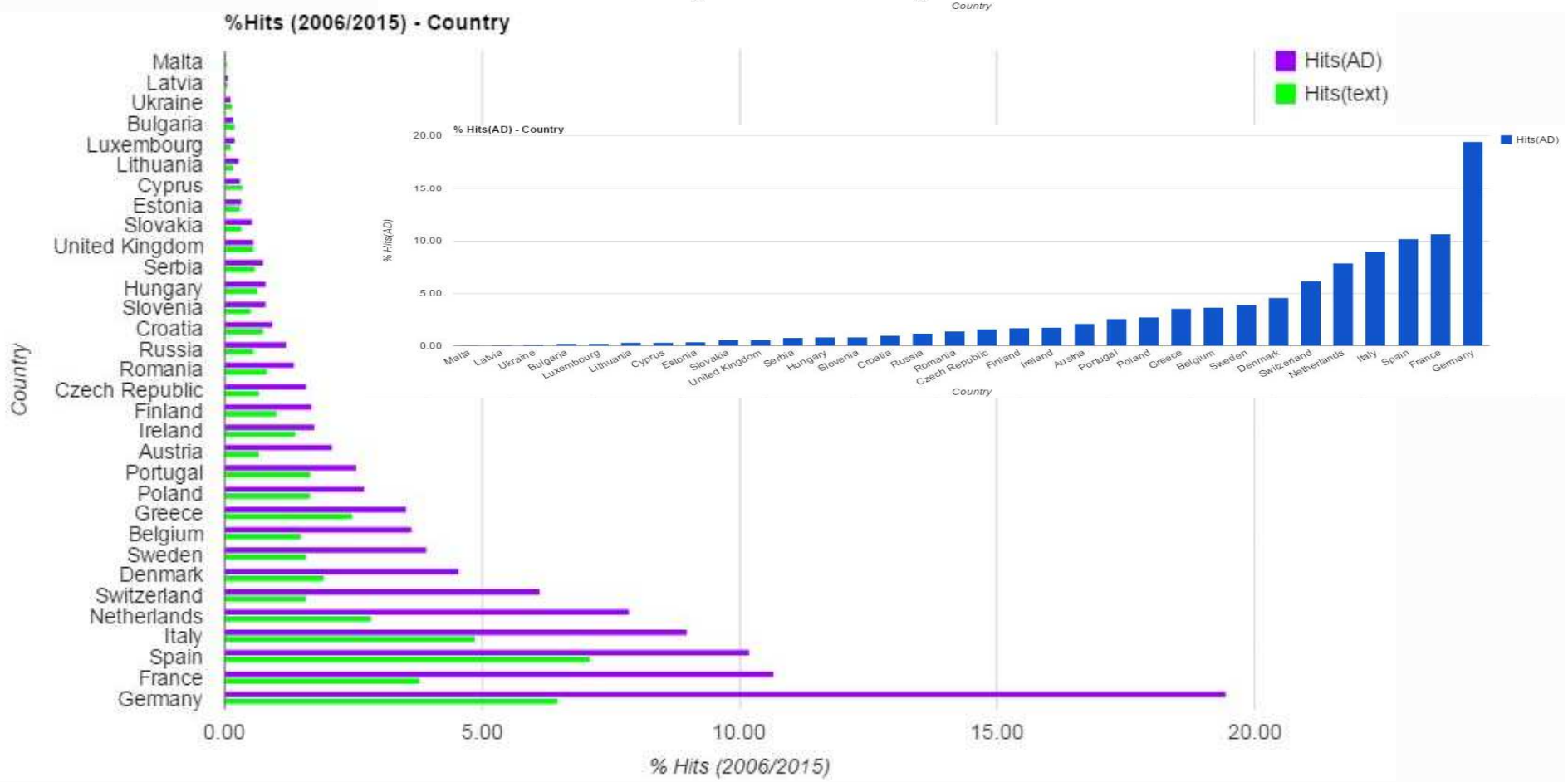
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Hits(AD)
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% Hits (2006/2015)

% Hits(AD) - Country
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Austria
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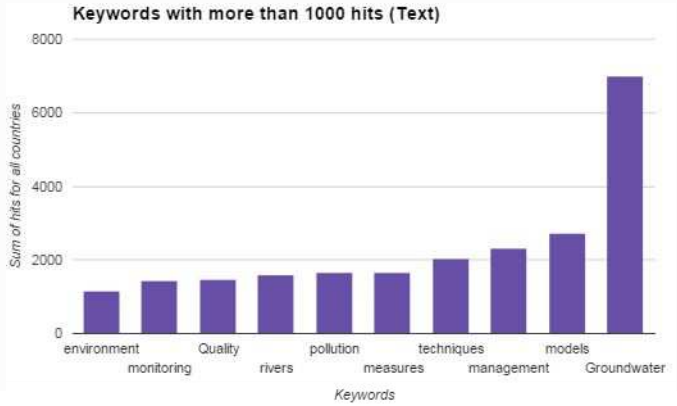
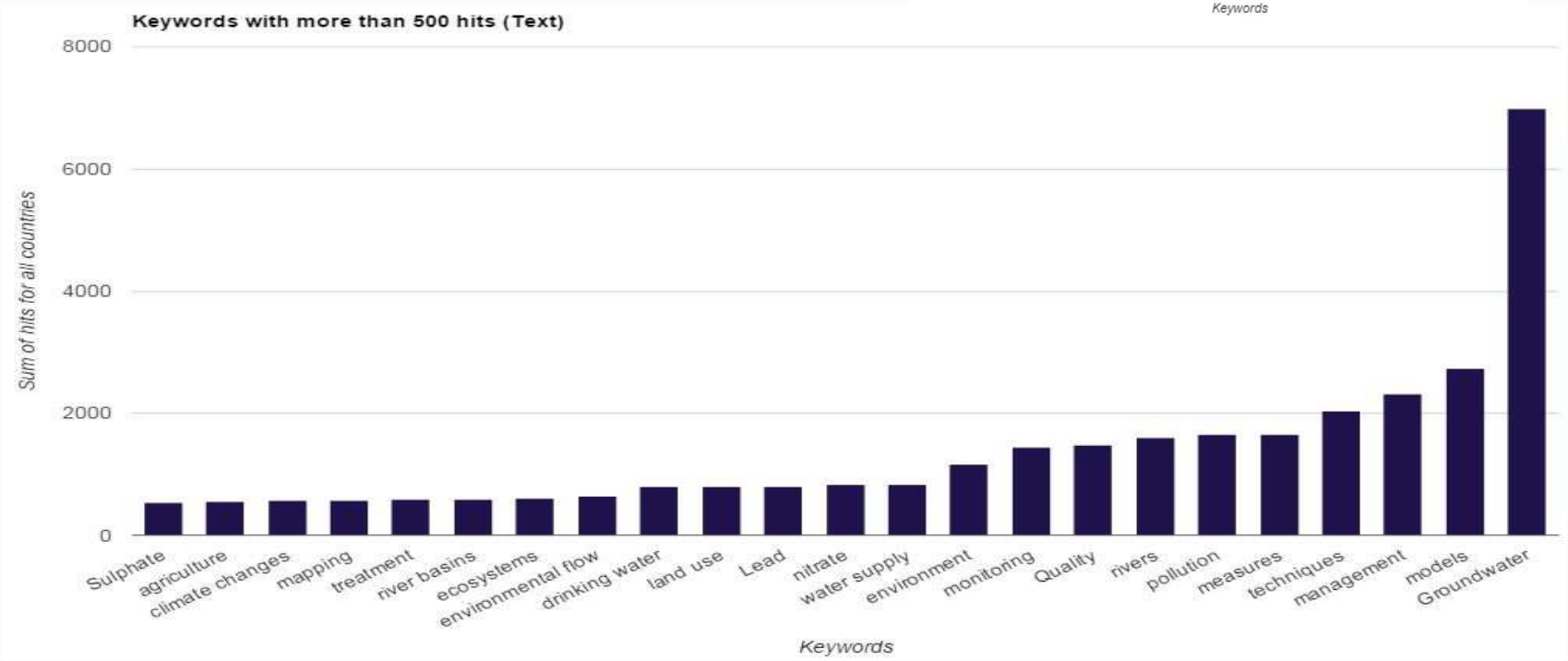
Diagrams (4/4)

Number of keywords is Reduced with number of Hits:
Where to set the threshold ?





Impact factor for sci journals alphabetically

Scientific Journals	
ADVANCES IN WATER RESOURCES	2.8
CATENA	2.5
ECOHYDROLOGY	2.6
ENVIRONMENTAL EARTH SCIENCES	1.6
GROUND WATER	2.0
GROUNDWATER	2.0
GROUND WATER MONITORING AND REMEDIATION	1.3
HYDROGEOLOGY JOURNAL	1.7
HYDROLOGY AND EARTH SYSTEM SCIENCES	3.6
HYDROLOGICAL PROCESSES	2.7
HYDROLOGY RESEARCH	1.9
JOURNAL OF CONTAMINANT HYDROLOGY	2.7
JOURNAL OF HYDRAULIC RESEARCH	1.3
JOURNAL OF HYDROLOGIC ENGINEERING	1.6
JOURNAL OF HYDRO ENVIRONMENT RESEARCH	3.0
JOURNAL OF HYDROLOGY	2.7
SCIENCE OF THE TOTAL ENVIRONMENT	3.2
VADOSE ZONE JOURNAL	2.4
WATER AIR AND SOIL POLLUTION	1.7
WATER RESEARCH	5.3
WATER RESOURCES	0.4
WATER RESOURCES MANAGEMENT	2.5
WATER RESOURCES RESEARCH	3.7

Ranking of water resources journals from Journal Citations Reports by Impact Factor (1/3)

Rank	Abbreviated Journal Title (linked to journal information)	ISSN	Total Cites	Impact Factor
1	WATER RES	0043-1354	49606	5.323
2	DESALINATION	0011-9164	23530	3.960
3	WATER RESOUR RES	0043-1397	34109	3.709
4	HYDROL EARTH SYST SC	1027-5606	6859	3.642
5	J HYDRO-ENVIRON RES	1570-6443	463	3.018
6	IRRIGATION SCI	0342-7188	1655	2.843
7	ADV WATER RESOUR	0309-1708	6571	2.780
8	J CONTAM HYDROL	0169-7722	4274	2.702
9	HYDROL PROCESS	0885-6087	13639	2.696
10	J HYDROL	0022-1694	29080	2.693
11	STOCH ENV RES RISK A	1436-3240	1653	2.673
12	ECOHYDROLOGY	1936-0584	776	2.634
13	ENVIRON GEOCHEM HLTH	0269-4042	1826	2.573
14	ENVIRON TOXICOL	1520-4081	2629	2.562
15	CATENA	0341-8162	5799	2.482
16	WATER RESOUR MANAG	0920-4741	4194	2.463
17	VADOSE ZONE J	1539-1663	3003	2.412
18	AGR WATER MANAGE	0378-3774	6671	2.333
19	J AM WATER RESOUR AS	1093-474X	3853	2.074
20	RIVER RES APPL	1535-1459	2424	1.971

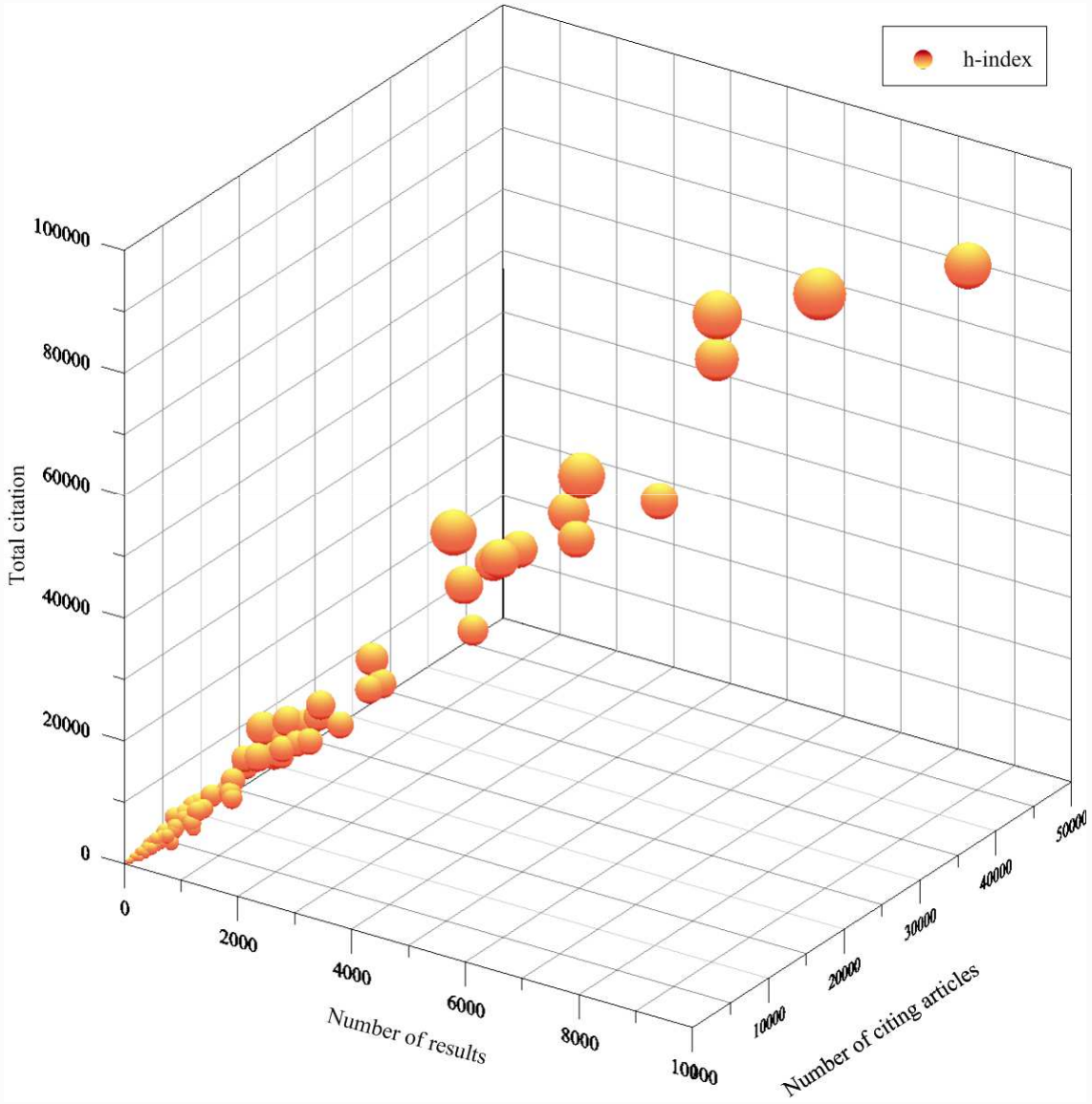
Ranking of water resources journals from Journal Citations Reports by Impact Factor (2/3)

Rank	Abbreviated Journal Title (linked to journal information)	ISSN	Total Cites	Impact Factor
21	NAT HAZARDS	0921-030X	4023	1.958
22	GROUND WATER	0017-467X	4446	1.953
23	HYDROL RES	1998-9563	473	1.944
24	CLEAN-SOIL AIR WATER	1863-0650	1680	1.838
25	NAT HAZARD EARTH SYS	1561-8633	3414	1.826
26	J SOIL WATER CONSERV	0022-4561	2637	1.811
27	OCEAN COAST MANAGE	0964-5691	2269	1.769
28	J WATER RES PLAN MAN	0733-9496	2665	1.760
29	AQUAT CONSERV	1052-7613	2078	1.756
30	HYDROGEOL J	1431-2174	3388	1.712
31	WATER AIR SOIL POLL	0049-6979	10594	1.685
32	J HYDROL ENG	1084-0699	2504	1.624
33	ENVIRON EARTH SCI	1866-6280	3103	1.572
34	J HYDRAUL RES	0022-1686	2078	1.347
35	J HYDROINFORM	1464-7141	683	1.336
36	WATER-SUI	2073-4441	282	1.291
37	J HYDRAUL ENG	0733-9429	6660	1.258
38	PHYS CHEM EARTH	1474-7065	2910	1.255
39	HYDROLOG SCI J	0262-6667	3459	1.252
40	GROUND WATER MONIT R	1069-3629	732	1.250

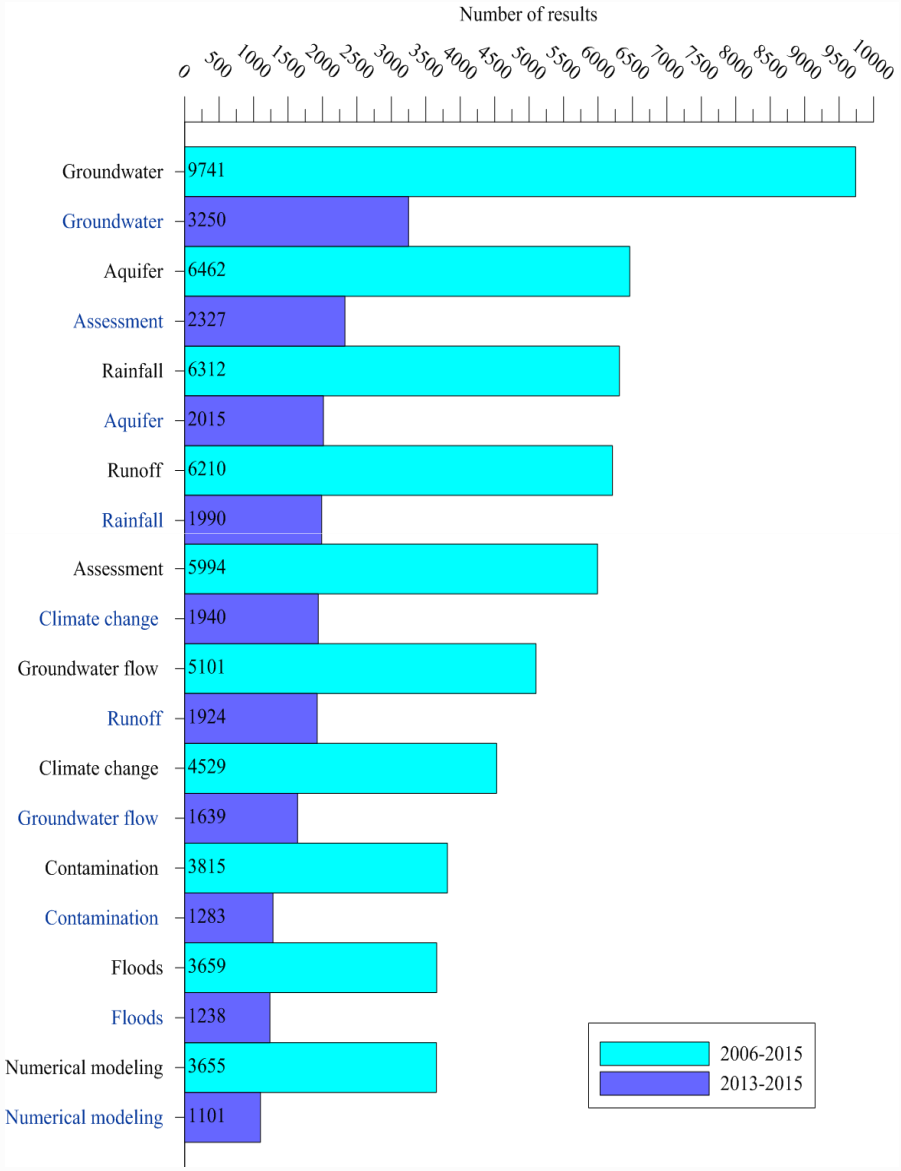
Ranking of water resources journals from Journal Citations Reports by total citations (3/3)

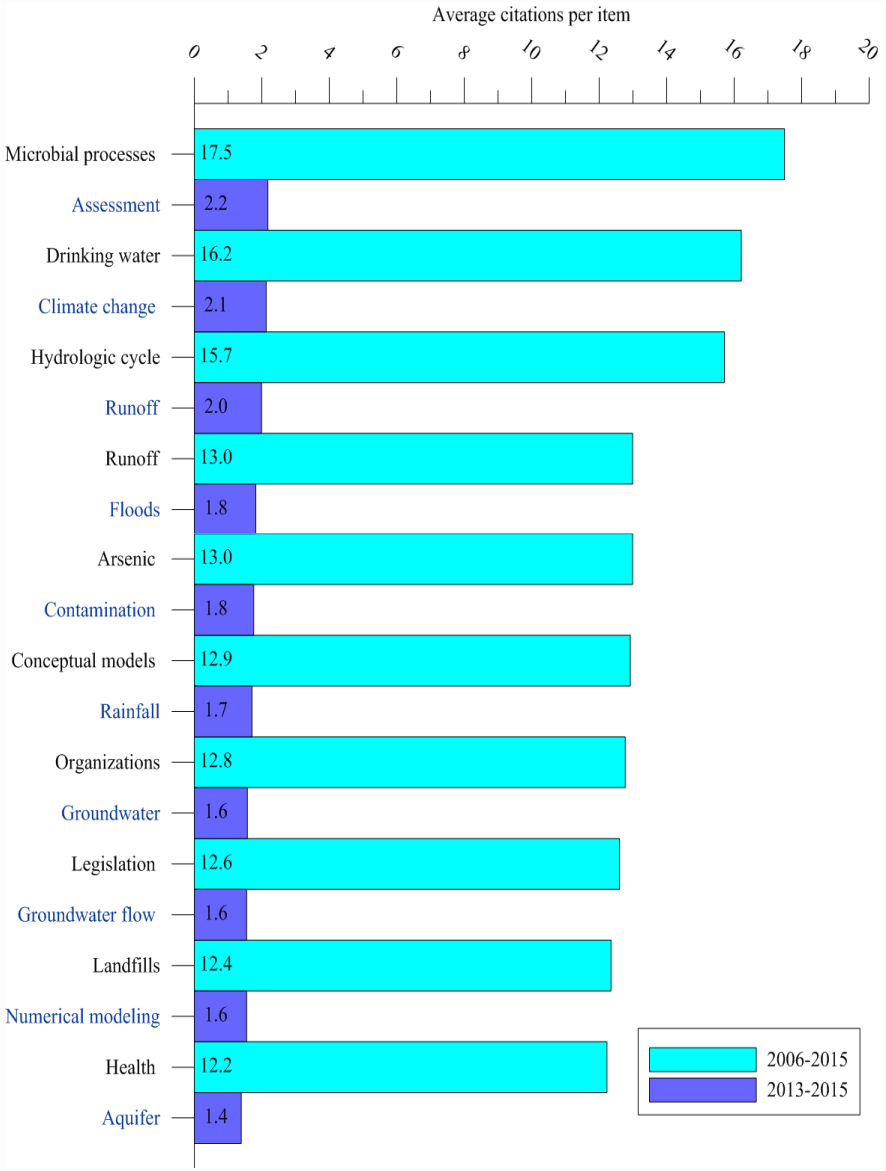
Rank	Abbreviated Journal Title (linked to journal information)	ISSN	Total Cites	Impact Factor
1	WATER RES	0043-1354	49606	5.323
2	WATER RESOUR RES	0043-1397	34109	3.709
3	J HYDROL	0022-1694	29080	2.693
4	DESALINATION	0011-9164	23530	3.960
5	WATER SCI TECHNOL	0273-1223	16261	1.212
6	HYDROL PROCESS	0885-6087	13639	2.696
7	WATER AIR SOIL POLL	0049-6979	10594	1.685
8	HYDROL EARTH SYST SC	1027-5606	6859	3.642
9	AGR WATER MANAGE	0378-3774	6671	2.333
10	J HYDRAUL ENG	0733-9429	6660	1.258
11	ADV WATER RESOUR	0309-1708	6571	2.780
12	CATENA	0341-8162	5799	2.482
13	GROUND WATER	0017-467X	4446	1.953
14	J CONTAM HYDROL	0169-7722	4274	2.702
15	WATER RESOUR MANAG	0920-4741	4194	2.463
16	NAT HAZARDS	0921-030X	4023	1.958
17	J AM WATER RESOUR AS	1093-474X	3853	2.074
18	HYDROLOG SCI J	0262-6667	3459	1.252
19	NAT HAZARD EARTH SYS	1561-8633	3414	1.826
20	HYDROGEOL J	1431-2174	3388	1.712

The 3D plot of the keywords from Scientific Journals

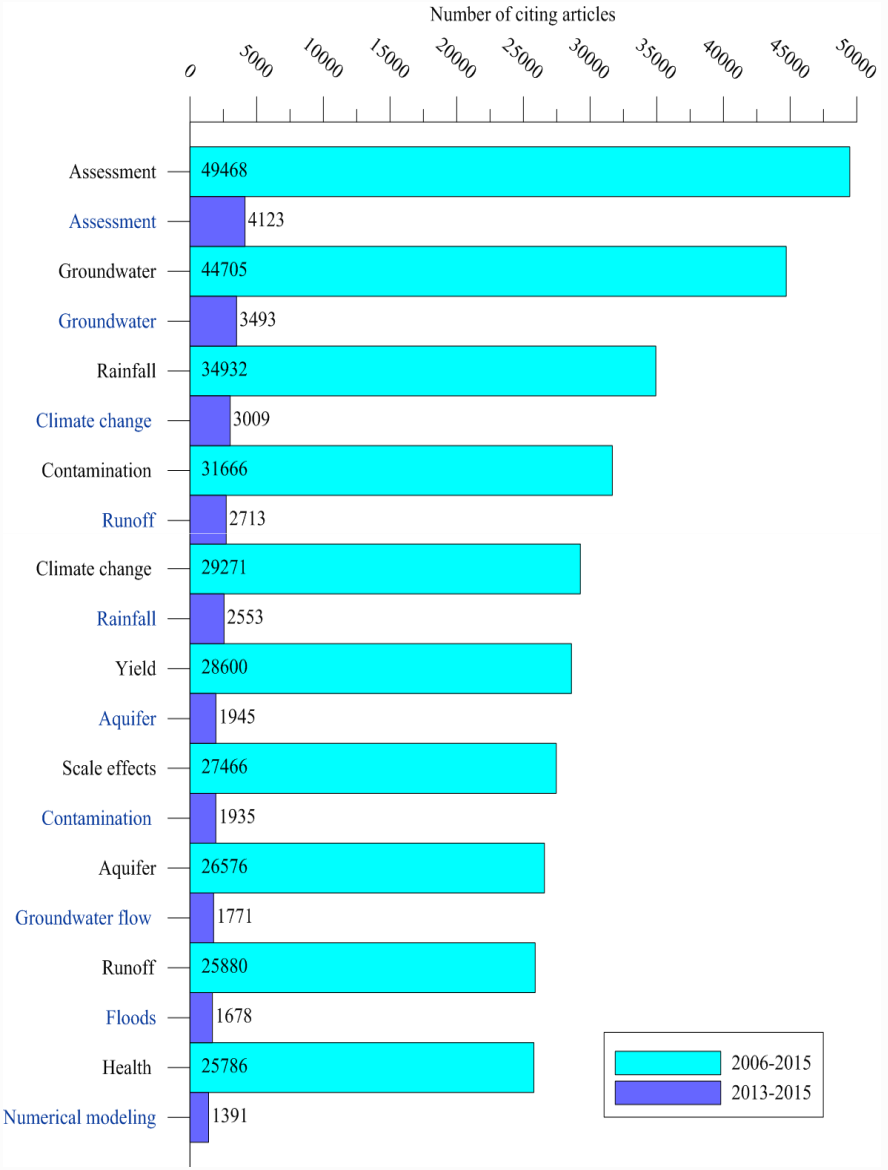


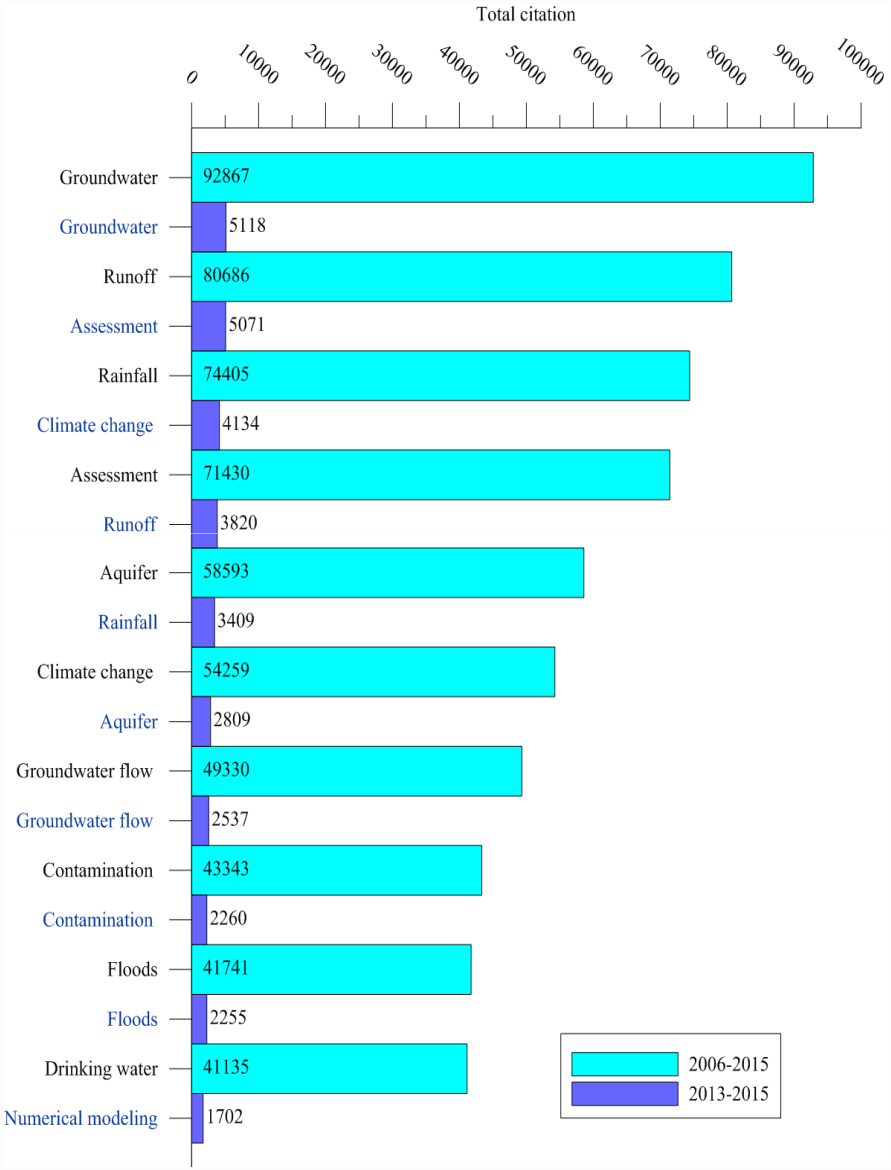
The comparison of „Top10” keywords by the number of results and the average citation for the period 2006-2015 and 2013-2015

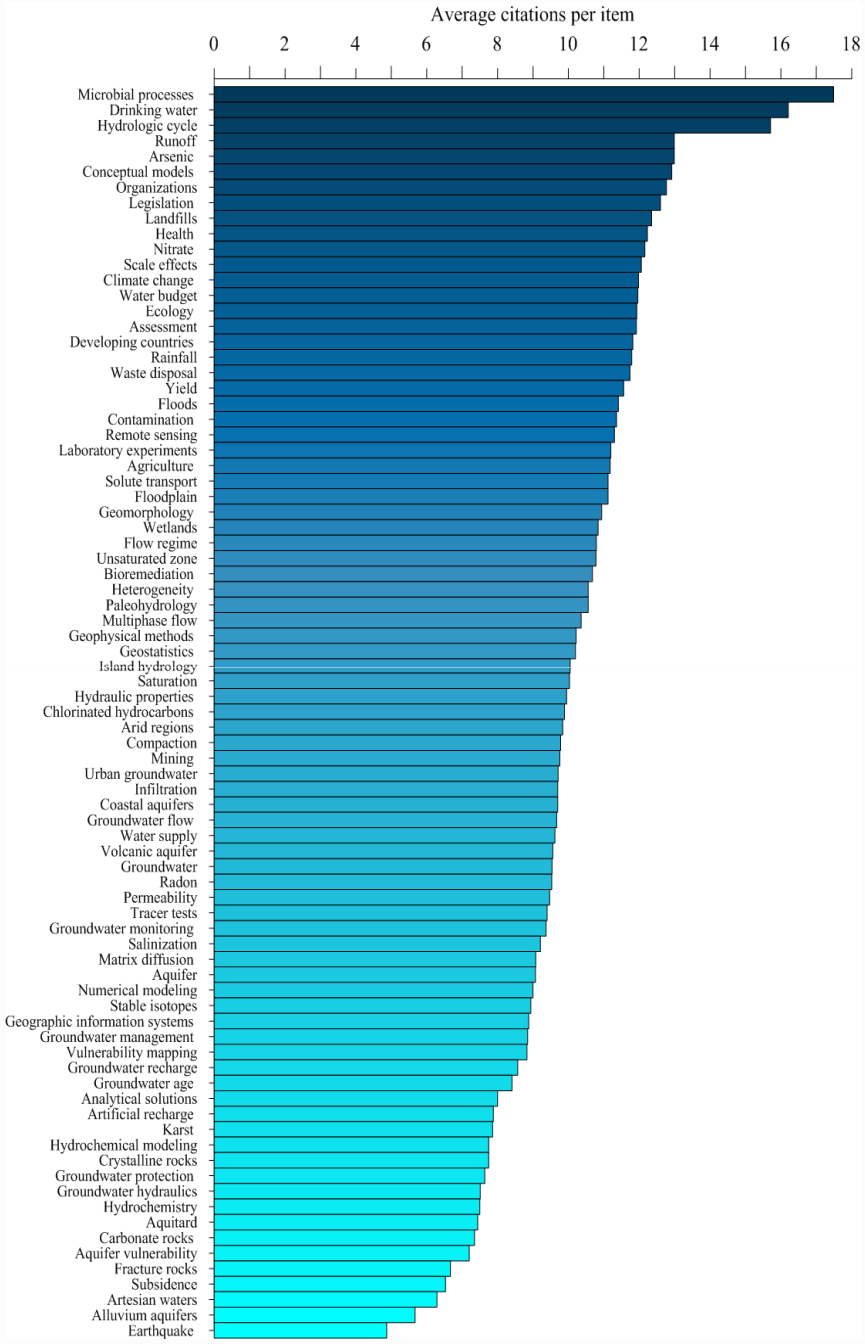




The comparison of „Top10” keywords by the number of citing articles and the total citation for the period 2006-2015 and 2013-2015



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8
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12
14
16
18
Microbial processes
Drinking water
Hydrologic cycle
Runoff
Arsenic
Conceptual models
Organizations
Legislation
Landfills
Health
Nitrate
Scale effects
Climate change
Water budget
Ecology
Assessment
Developing countries
Rainfall
Waste disposal
Yield
Floods
Contamination
Remote sensing
Laboratory experiments
Agriculture
Solute transport
Floodplain
Geomorphology
Wetlands
Flow regime
Unsaturated zone
Bioremediation
Heterogeneity
Paleohydrology
Multiphase flow
Geophysical methods
Geostatistics
Island hydrology
Saturation
Hydraulic properties
Chlorinated hydrocarbons
Arid regions
Compaction
Mining
Urban groundwater
Infiltration
Coastal aquifers
Groundwater flow
Water supply
Volcanic aquifer
Groundwater
Radon
Permeability
Tracer tests
Groundwater monitoring
Salinization
Matrix diffusion
Aquifer
Numerical modeling
Stable isotopes
Geographic information systems
Groundwater management
Vulnerability mapping
Groundwater recharge
Groundwater age
Analytical solutions
Artificial recharge
Karst
Hydrochemical modeling
Crystalline rocks
Groundwater protection
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Aquitard
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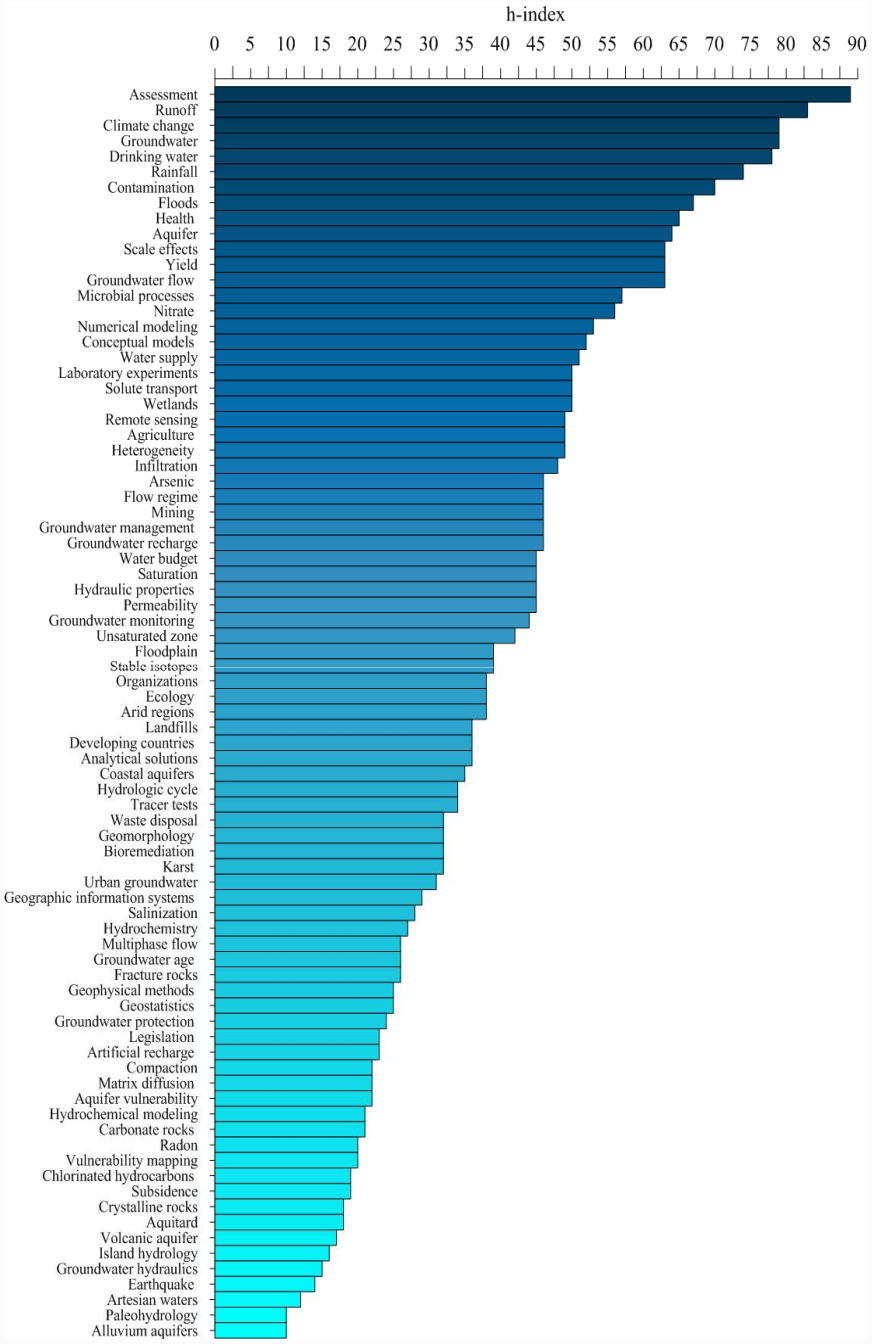
Fracture rocks
Subsidence
Artesian waters
Alluvium aquifers
Earthquake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Climate change
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Drinking water
Rainfall
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Floods
Health
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Scale effects
Yield
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Microbial processes
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Conceptual models
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Flow regime
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Groundwater recharge
Water budget
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Permeability
Groundwater monitoring
Unsaturated zone
Floodplain
Stable isotopes
Organizations
Ecology
Arid regions
Landfills
Developing countries
Analytical solutions
Coastal aquifers
Hydrologic cycle
Tracer tests
Waste disposal
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Bioremediation
Karst
Urban groundwater
Geographic information systems
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Radon
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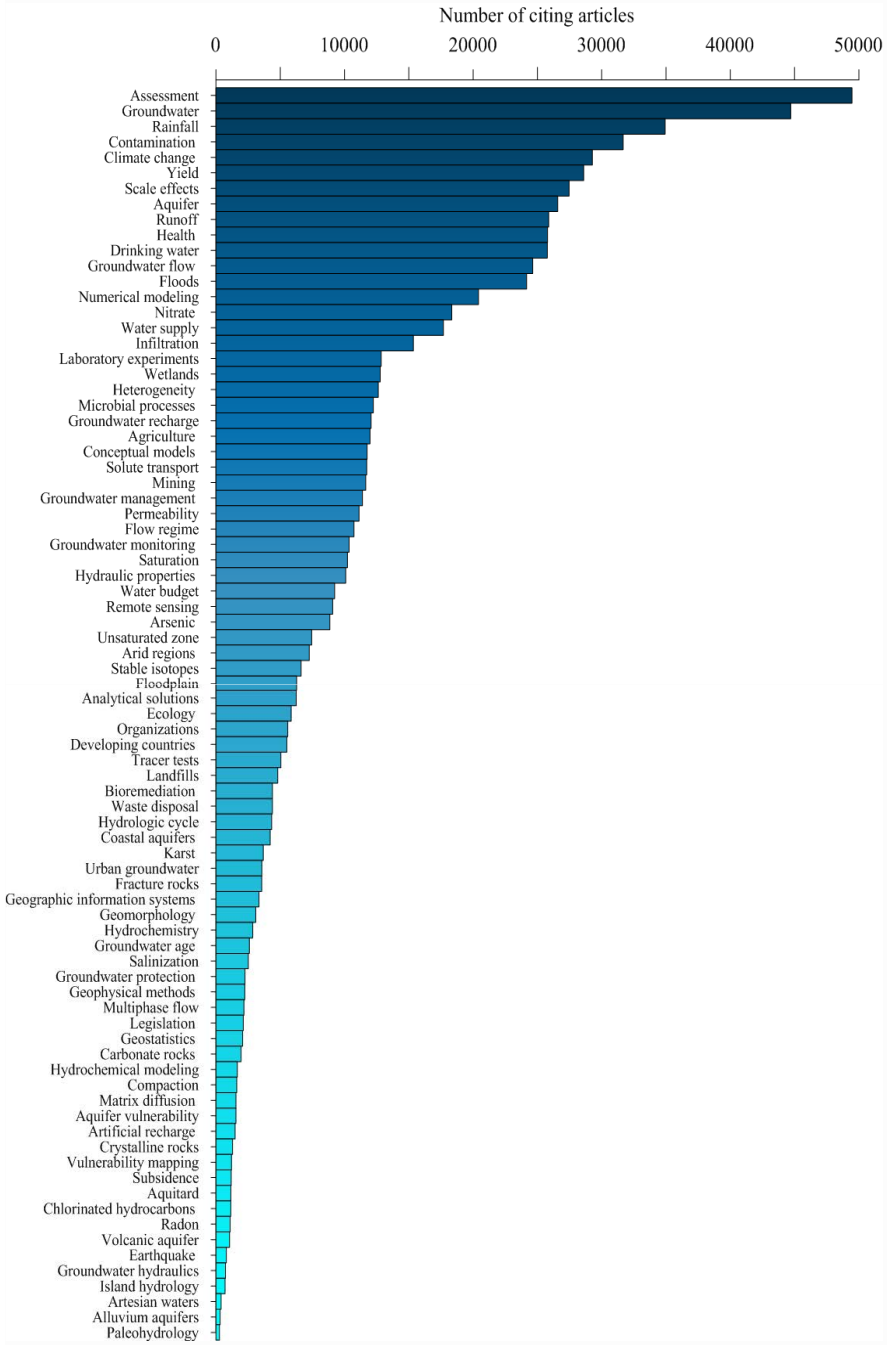
Chlorinated hydrocarbons
Subsidence
Crystalline rocks
Aquitard
Volcanic aquifer
Island hydrology
Groundwater hydraulics
Earthquake
Artesian waters
Paleohydrology
Alluvium aquifers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Rainfall
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Yield
Scale effects
Aquifer
Runoff
Health
Drinking water
Groundwater flow
Floods
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Tracer tests
Landfills
Bioremediation
Waste disposal
Hydrologic cycle
Coastal aquifers
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Subsidence
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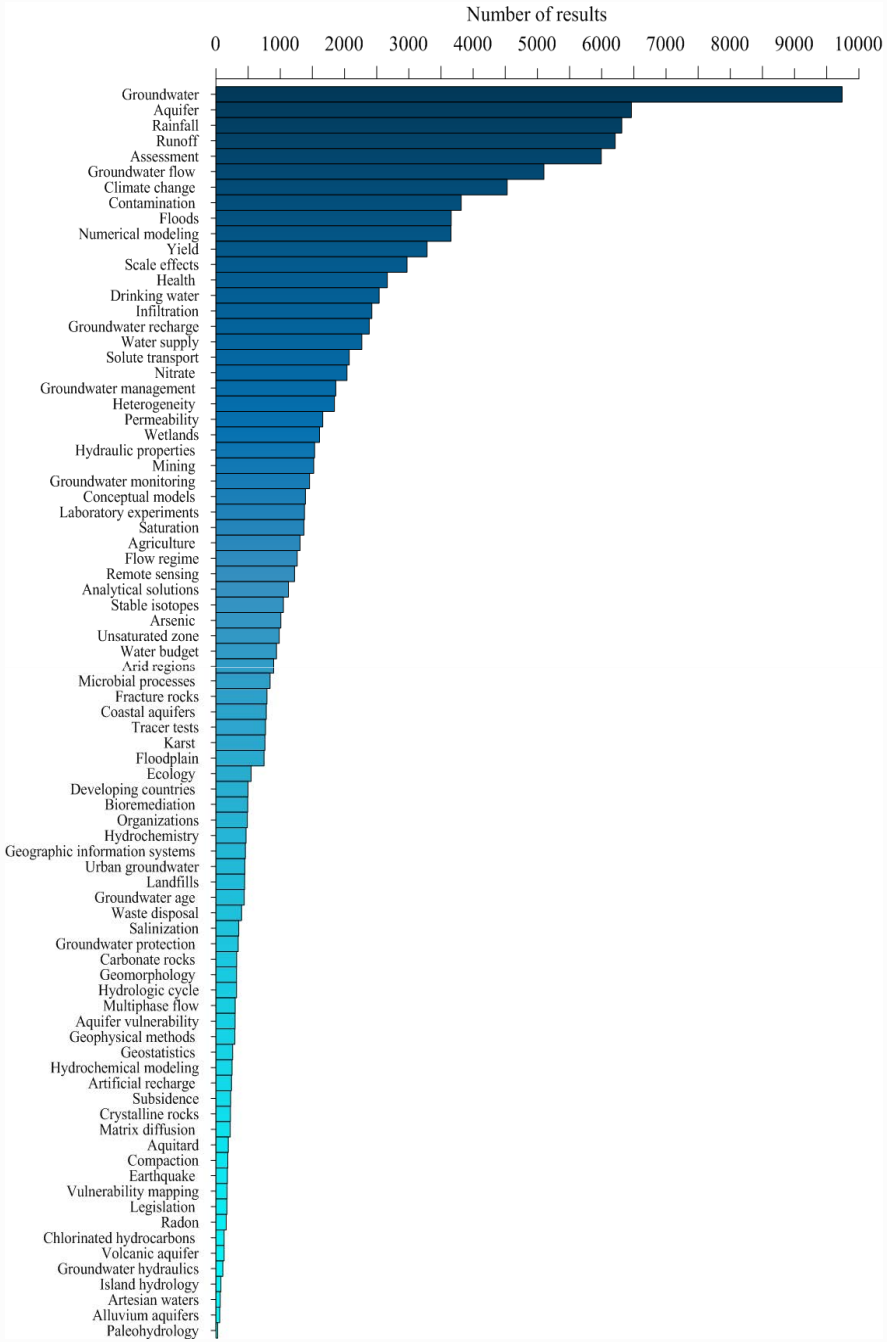
Alluvium aquifers
Paleohydrology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Rainfall
Runoff
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Climate change
Contamination
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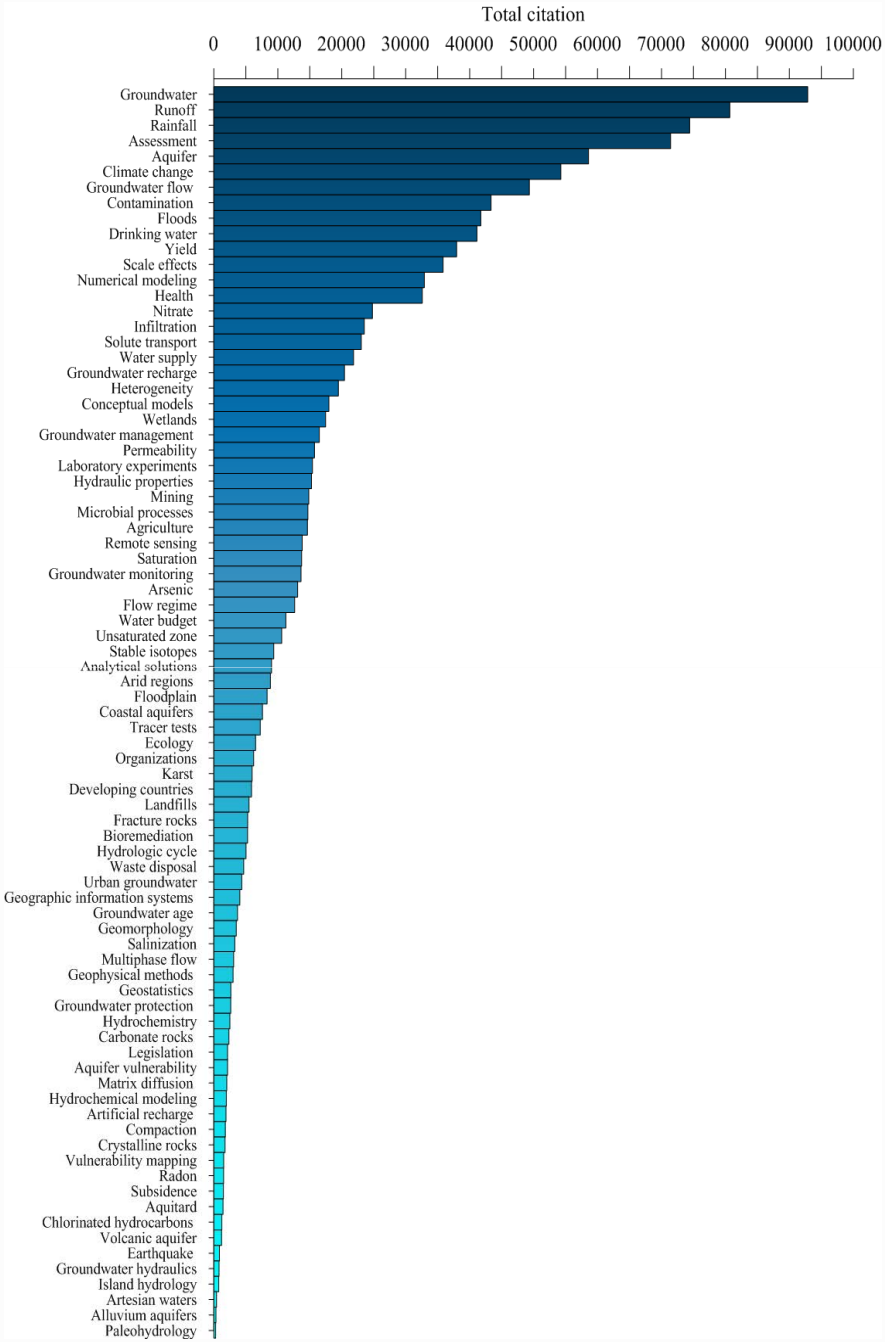
Paleohydrology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Runoff
Rainfall
Assessment
Aquifer
Climate change
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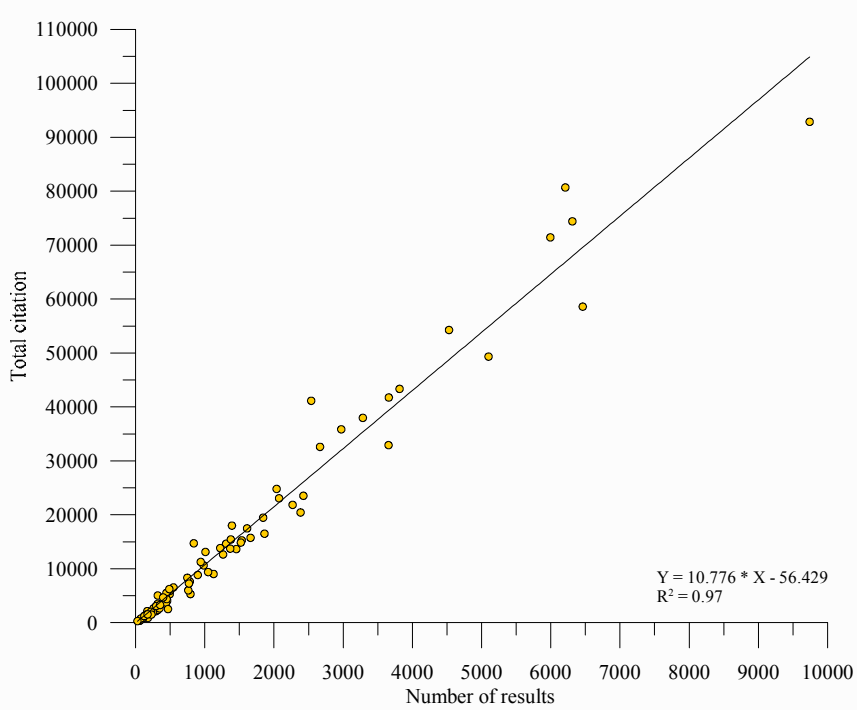
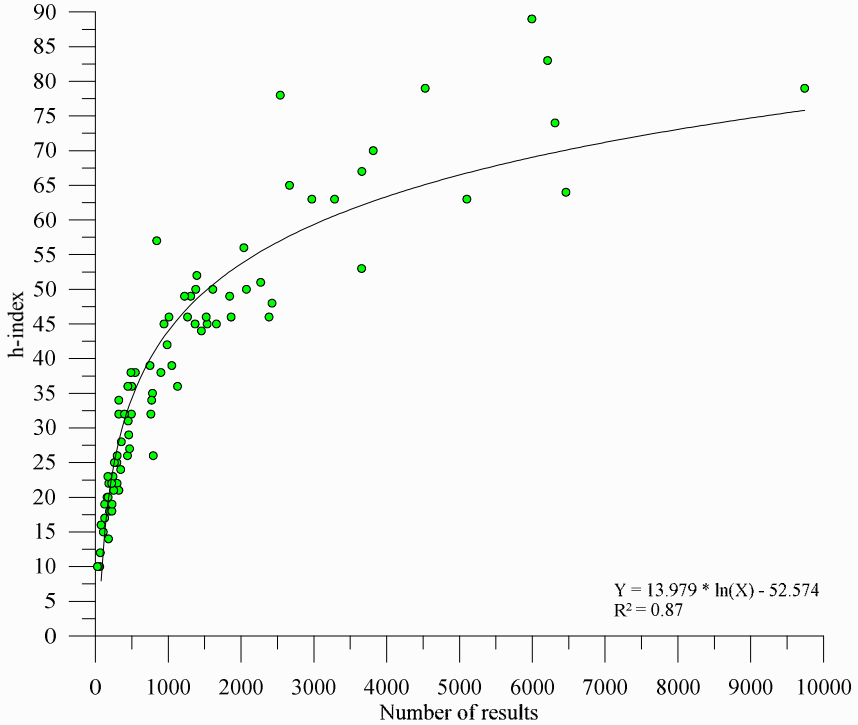
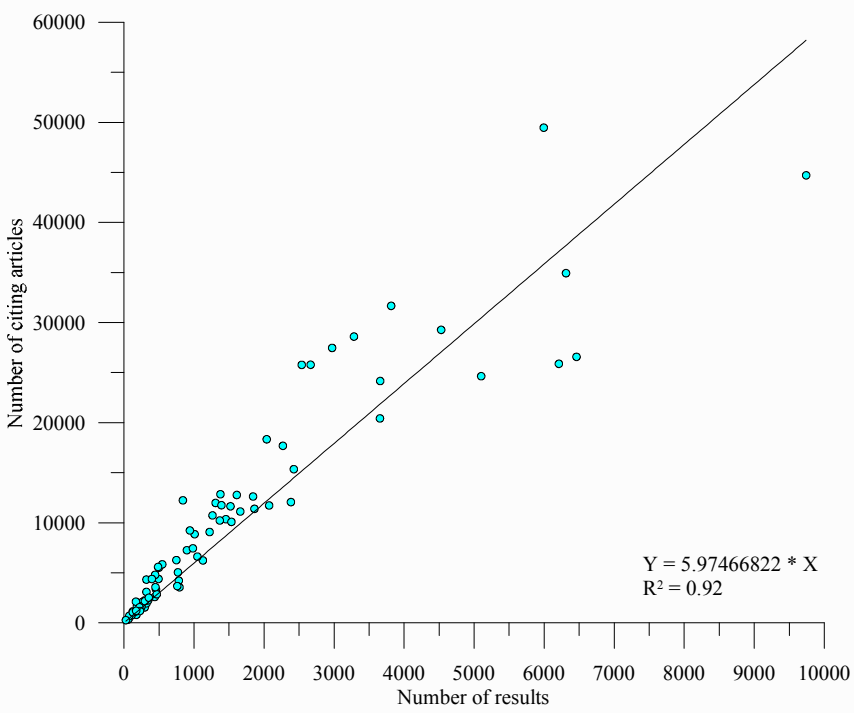
Paleohydrology

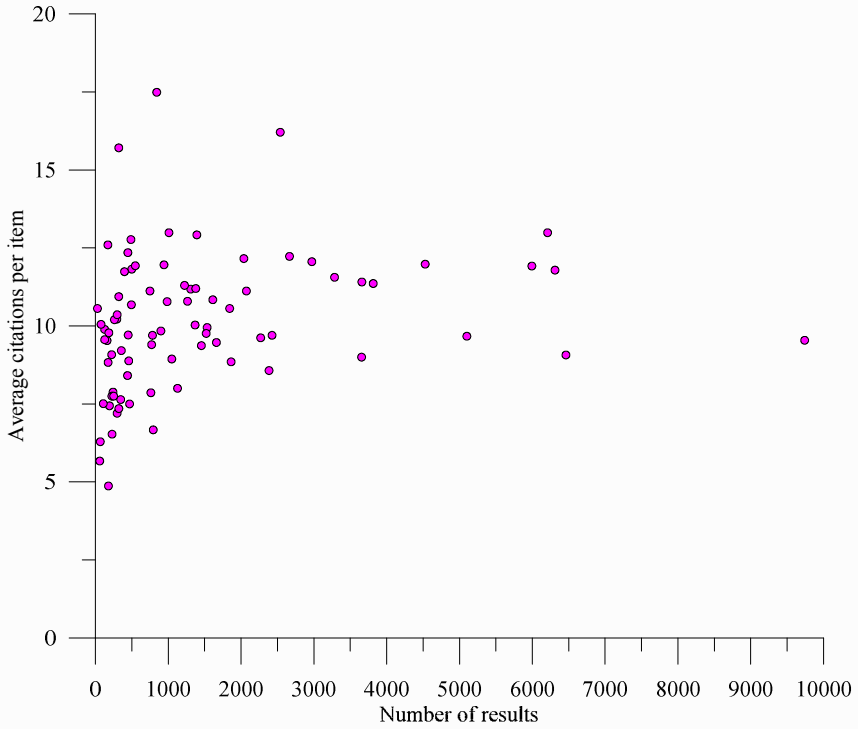
Correlation between search criterias in scientific journals





Correlation between search criterias in scientific journals



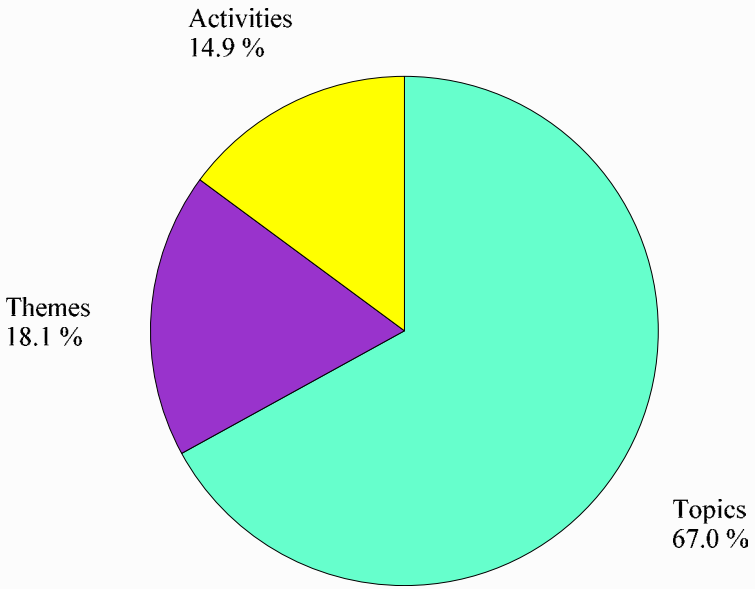


Hierarchical structure of the litterature search in scientific journals

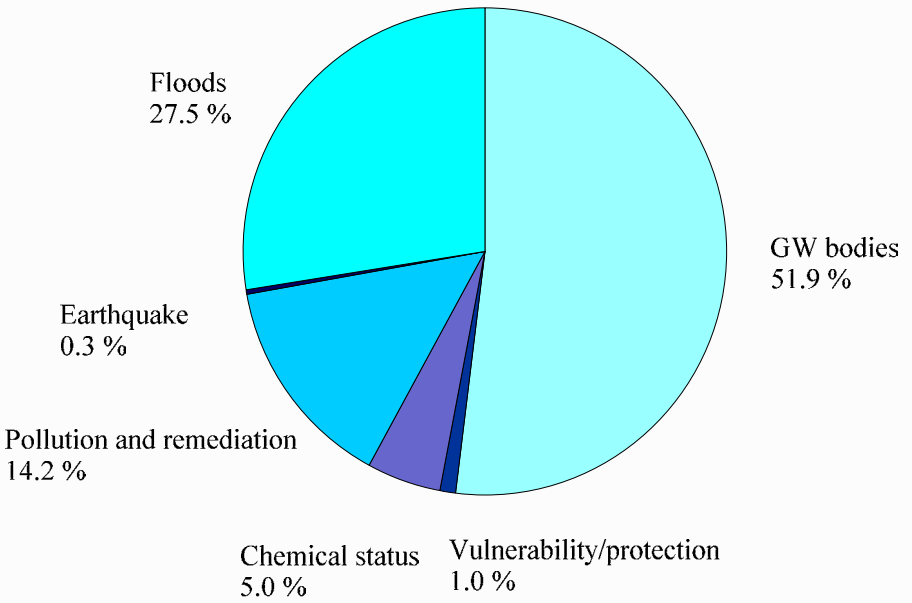
TOPICS		THEMES		ACTIVITIES	
GW bodies		***Agriculture***	1308	***Quality assessment***	
Alluvium aquifers	58	***Climate***		Laboratory experiments	1377
Aquifer	6462	Arid regions	898	Hydrochemistry	468
Aquitard	192	Climate change	4529	Vulnerability mapping	173
Carbonate rocks	321	Hydrologic cycle	320	***Monitoring***	
Artesian waters	66	Infiltration	2425	Groundwater monitoring	1455
Flow regime	1264	***Health***	2665	***Modeling***	
Crystalline rocks	225	Drinking water	2538	Analytical solutions	1127
Fracture rocks	793	***Urban areas***		Hydrochemical modeling	250
Geomorphology	320	Artificial recharge	241	Numerical modeling	3655
Groundwater	9741	Developing countries	498	Scale effects	2972
Groundwater flow	5101	Groundwater recharge	2384	***Conceptual models***	1392
Heterogeneity	1843	Landfills	445	***GW budget***	
Hydraulic properties	1534	Urban groundwater	449	Assessment	5994
Island hydrology	76	Waste disposal	398	Water budget	941
Karst	761	Water supply	2269	***Policy***	
Paleohydrology	27	Yield	3284	Groundwater management	1863
Permeability	1661	***Mining***	1521	Legislation	170
Saturation	1368	Compaction	183	Organizations	487
Volcanic aquifer	126	Subsidence	228		
Vulnerability/protection		***Ecology***	547		
Aquifer vulnerability	297				
Groundwater protection	346				
Chemical status					
Arsenic	1009				
Nitrate	2038				
Pollution and remediation					
Bioremediation	493				
Chlorinated hydrocarbons	126				
Contamination	3815				
Matrix diffusion	222				
Microbial processes	841				
Multiphase flow	298				
Solute transport	2073				
Unsaturated zone	894				
Earthquake	178				
Floods	3659				
Floodplain	748				
Rainfall	6312				
Runoff	6210				
SW-GW interactions					
Coastal aquifers	783				
Salinization	355				
Thresholds&background					
Groundwater age	440				
Wetlands	1611				
Instruments and tools					
Geographic information systems	457				
Geophysical methods	294				
Geostatistics	260				
Groundwater hydraulics	107				
Radon	159				
Remote sensing	1223				
Stable isotopes	1048				
Tracer tests	771				

Pie charts from the litterature search results of the scientific journals

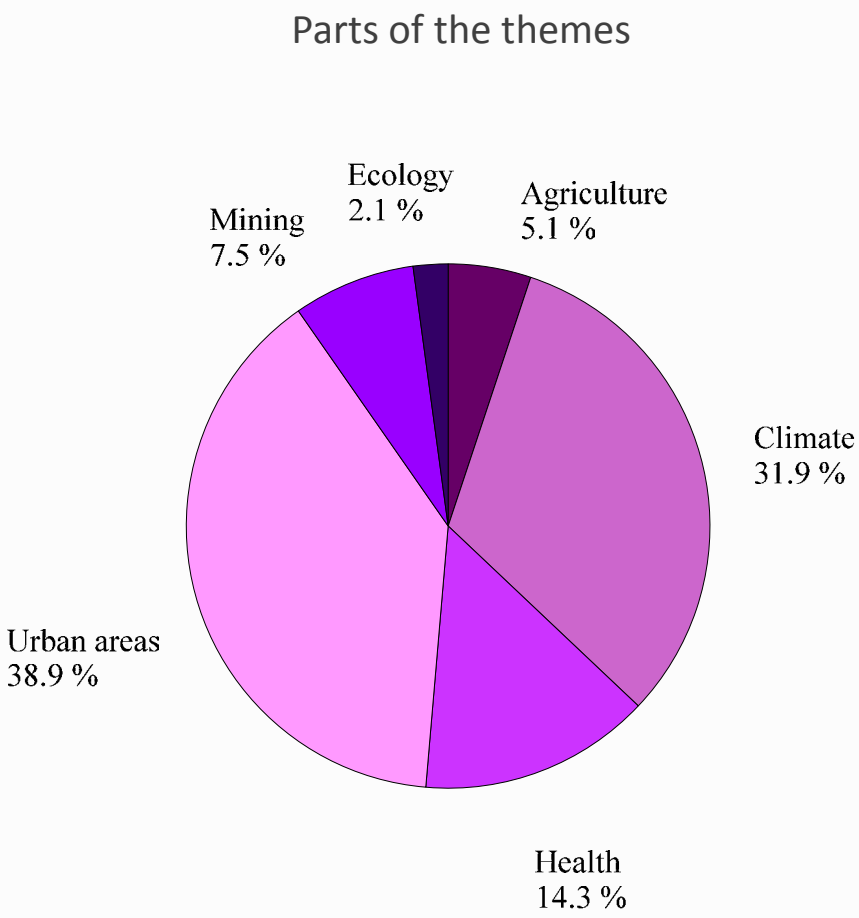
Main cathegories of the hierarchical structure

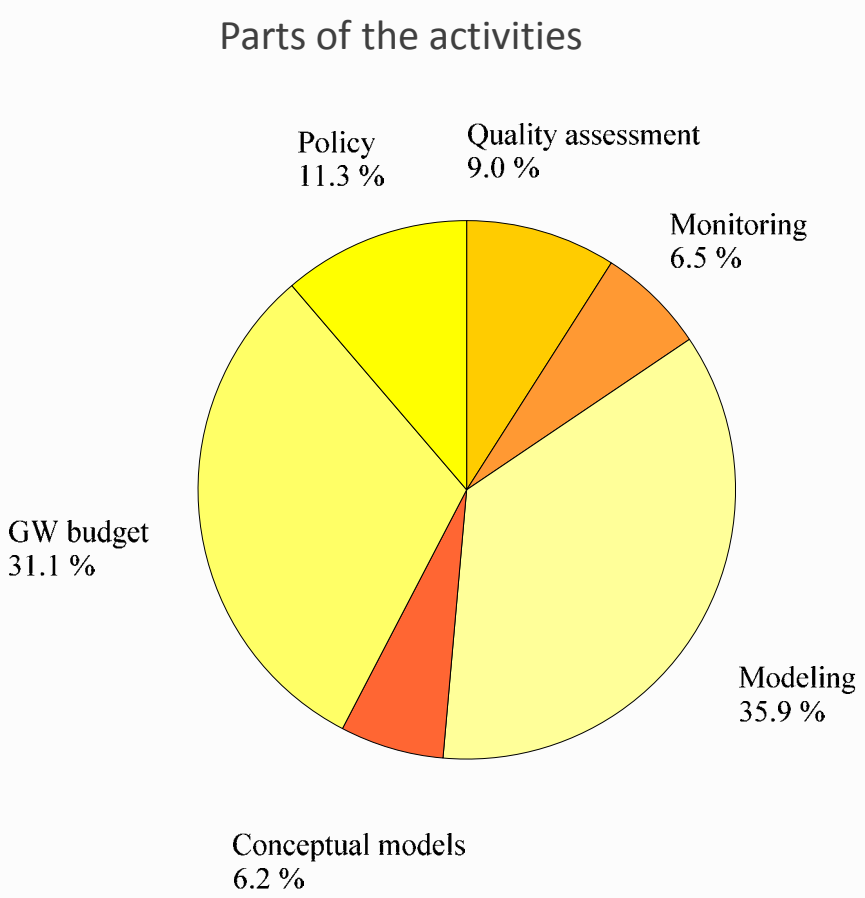


The parts of topics



Pie charts from the litterature search results of the scientific journals



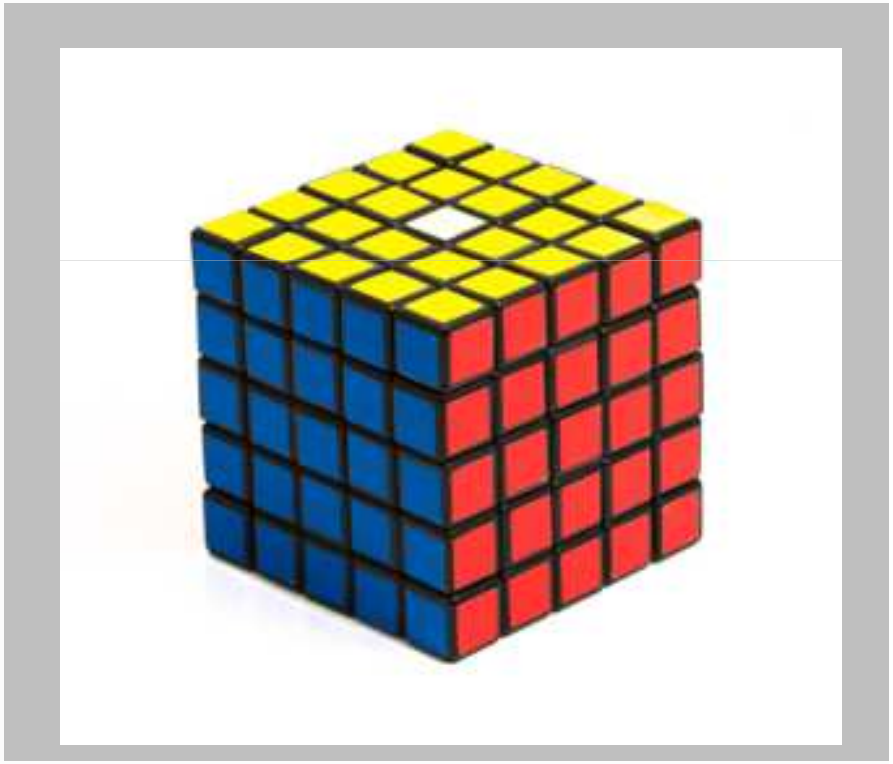


GW research classification

Using Rubik's cube?

Classification: **Keywords / topics**, **themes and activities** from the WFD and GWD, the Blueprint to protect Europe's Water Resources and in addition:

Themes related to:
Suggestions:
The water – food – energy Nexus (UN / WEF)
H2020 societal challenges
Web of science searches (& using ResearchGate etc)
Endusers
Business options
…



Suggestion for organization of keywords in Topics, Themes, Activities

TOPICS	
rivers	13021
river basins	2864
transboundary	114
marine waters	1040
coastal waters	2596
territorial waters	21
transitional waters	86
salt water	437
groundwater bodies	1501
water table decline	269
land subsidence	384
surface water interaction	1710
wetlands	1743
salinity	2460
electrical conductivity	1198
intrusions	1302
status	1327
biological status	87
ecological status	160
quantitative status	45
abstraction	557
extraction	2219
chemical status	364
Natural background	302
threshold	738
Ammonium	905
Arsenic	6858
Cadmium	682
chloride	2603
Lead Pb	622
Mercury	346
nitrate	9313
Sulphate	5794
trends	2210

hazards	1016
indicators	1805
vulnerability	976
deterioration	413
pollution	20122
pesticides	1464
pharmaceuticals	549
synthetic substances	48
Tetrachloroethylene	192
Trichloroethylene	657
ecological flows	412
e-flows	7
environmental flow	6183
dependent ecosystems	281
Hydrogeological cycle	58
droughts	1012
scarcity	427
floods	1699
Quality	14454
Quantity	1278

THEMES	
Climate	
climate changes	2537
ecoregions	14
hydrological cycle	406
Ecosystems	5648
aquatic ecosystems	519
ecotoxicology	41
stygofauna	60
terrestrial ecosystems	529
environment	13333
Health	
human health	2234
human toxicology	653
agriculture	5893
farming	
tourism	84
industry	1836
Urban areas	
drinking water	9918
storage	2682
water services	510
water supply	7662
Energy	
energy production	402
shale gas	113
Food	

ACTIVITIES	
characterisation	2092
management	28499
integrated mana	1227
integrated water	595
land use	7031
over-use	13
overuse	54
sustainable wate	1198
measures	16947
mitigation	497
protection	1664
policy	1182
Groundwater Dir	430
sustainable	1742
Water Framewor	298
Lead	8357
techniques	25622
innovations	63
mapping	2460
models	28406
monitoring	12625
treatment	10048
Review	1515

KINDRA

Knowledge Inventory for hydrogeology research

Task 1.2

In-house inventory of information sources

Eva Hartai, Isabel Fernandez
European Federation of Geologists

Aim

- Mapping the information sources for groundwater research at national level in 20 EU countries

Methodology

- Preparing a questionnaire on information sources at national level
- Sending it to EFG's national member associations (20 countries)
- Summarisation and evaluation of data

Space for image

Questionnaire

1. How many institutions deal with groundwater research in your country?

   A: less than 10 B: between 10 and 20 C: more than 20

2. Please fill the table for the institutions related to groundwater research in your country:

Institution/web	*Level*				*Type*					*Data accessibility*		
	International	Federal/ Regional	National	Local	University	Research centre	Public body	Private company	Other	Yes	Partly	No
Example		x				x				x		

3. What percentage of the drinking water derives from groundwater in your country?

   A: less than 30 % B: 30-70 % C: more than 70 %

Questionnaire

4. Are there any official data about anthropogenic groundwater withdrawals?

   A: yes B: no

5. If yes, please indicate those withdrawal types where data are accessible:

   A: domestic B: industrial C: agricultural
   D: public supply E: mining F: energy
   G: other (please specify)

6. How many stations are there in your groundwater monitoring network/s?

   A: less than 50 B: between 50 and 200 C: more than 200

7. How large part of your country is covered by groundwater monitoring network/s?

   A: less than 50 % B: between 50-100 % C: 100 %

Questionnaire

8. What type of data are collected by the groundwater monitoring network/s?

   A: quantitative B: qualitative C: Both

9. Are you aware of any parameters that are not presently monitored, but should be?

10. Are the monitored data available online?

    A: yes B: no C: partly

11. Are there any national journals focused on hydrogeology in your country?

    A: yes B: no

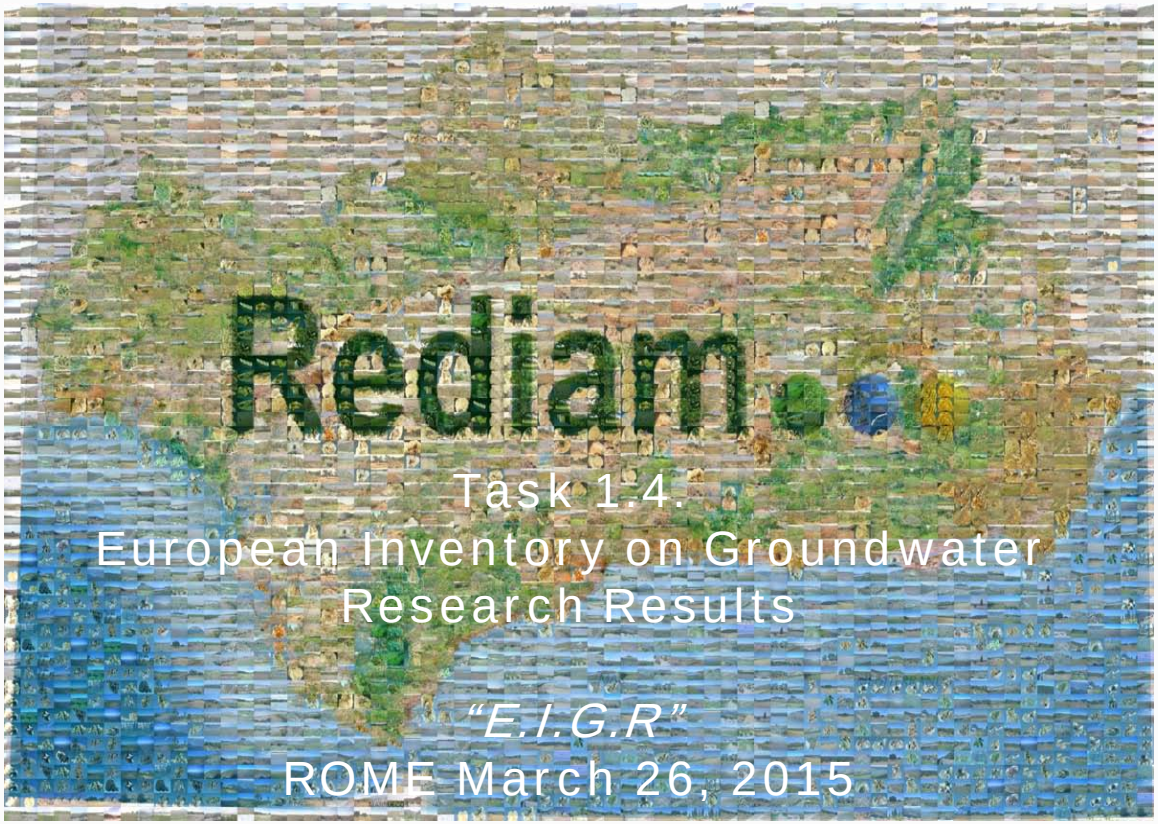
12. If any, please list the names of these journals, indicating if they are on-line/printed (O/P) and English/national language (E/N) (add rows if necessary):

Name of journal	O/P	E/N

KINDRA

Knowledge Inventory for hydrogeology research

Thank you for your attention!



KINDRA

Knowledge Inventory for hydrogeology research

An Environmental Information System for Andalusia

Social Environmental Awareness

Vast, diverse and complex territory

Threats to fragile ecosystems

Wide environmental regional responsibilities in management and planification of natural resources.

Need to have the best available environmental information

Since the 80`s the Regional Ministry of Environment has worked on generating, compiling, standardizing and analyzing environmental information, using ICTs (GIS, Remote Sensing, etc...)

¿What is the REDIAM?

Data

Rediam

Information

Knowledge

...and what is it used for?

Decision making
Management Planning

Dissemination Awareness

Research

Shared Environmental Information System based on ICT (*e-Infraestructure*)

How?

Basic principles

- Distributed System: Whom produces, integrates and maintains.
- To serve as a SINGLE information catalogue for all users
- Exchange of information based on interoperable services
- Open access to information
- Information Infrastructure based on ICT
- Needs a Core Team

Environmental Information Infrastructure of Andalusia

Components

REPOSITORY: Datasets Storage

CATALOGUE: Metadata records collection

WEB CHANEL & DATA SERVICES: Access and Dissemination Systems: services, books, media, web portal, …..

PROCCESSES: Protocols, procedures, standards and rules

A network of environmental data providers & users

More than 150 producer, user and disseminator entities of environmental information of Andalusia

Universities, Research Centers, Associations, Companies, Public Bodies, etc…

Comunidad REDIAM

ugr

UICN

esri

aesma

UNIVERSIDAD DE SEVILLA

ma

UNIVERSIDAD D CÓRDOBA

AEMet
Agencia Estatal de Meteorología

INTA

BIOGEOS
ESTUDIOS AMBIENTALES

ELIMCO

ersaf
EVALUACIÓN Y RESTAURACIÓN DE SISTEMAS AGRÍCOLAS Y FORESTALES

FUNDACIÓN GYPAETUS

European Topic Centre
Spatial Information and Analysis

NOSDO

meteogrid

IESA

Centro Informático Científico Andalucía

Estación Biológica Doñana CSIC

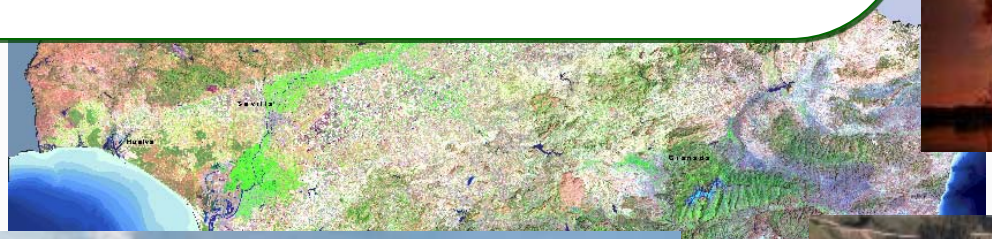
UNIVERSIDAD PABLO DE OLAVIDE SEVILLA

fic
fundación para la investigación del clima

C·E·A·M·A
Instituto Interuniversitario de Investigación del Sistema Tierra de Andalucía

Which Information?

climate soil vegetation pollution
water uses geology cartography
gaming covers infraestructures coastline
wildfires culture floods sportsfishing fauna
flora natural areas habitats plans geomorphology
landscape geodiversity...

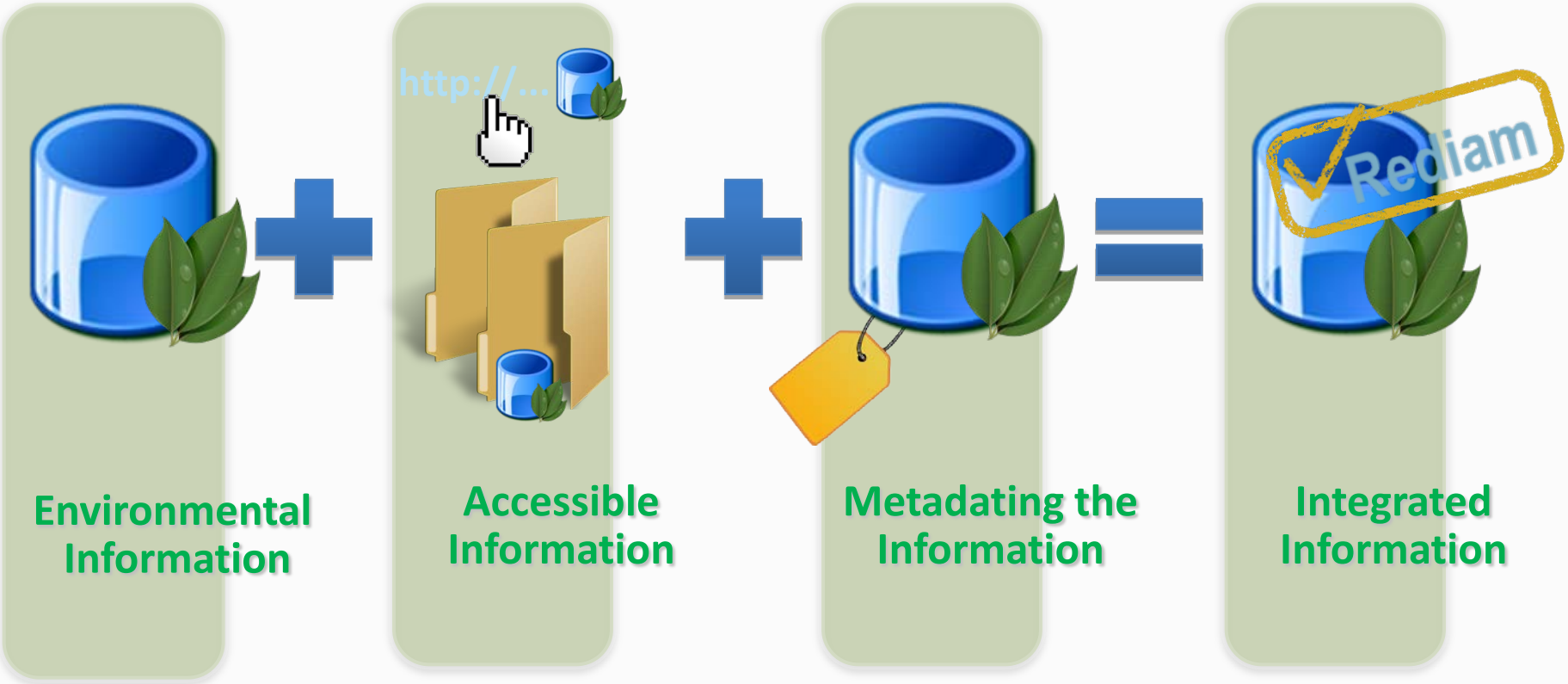





REDIAM Information Formats

reports studies photographs orthophotos satellite images cartography maps models databases planning & programs, statistics, indicators applitations

What can be labeled as information integrated into the REDIAM?



REDIAM Channel: much more than a Geoportal

Catalog Information and Search System

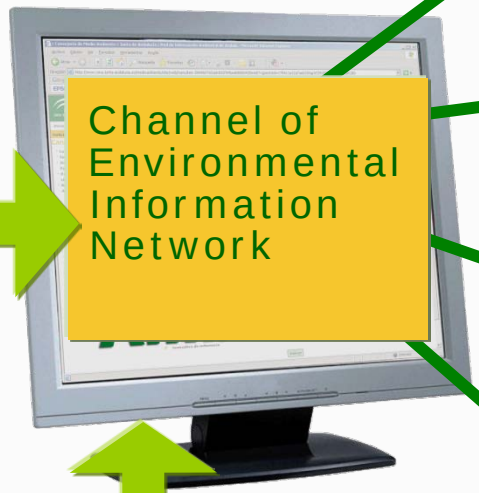
Applications Form

Query and Viewer Tools

OGC Services

Downloader

Partners' Area



Single Register of Environmental Information

University

Public Administration

Companies

Citizen

KINDRA

GROUP ON EARTH OBSERVATIONS

JRC EUROPEAN COMMISSION

EIONET

ipcc climate change

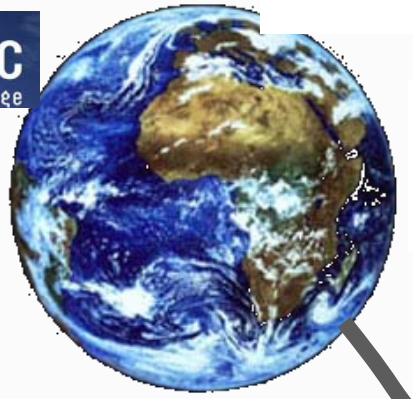
GBIF

GMES

UICN

eurostat

European Environment Agency



siose

INSTITUTO GEOGRÁFICO NACIONAL

EVALUACIÓN DE ECOSISTEMAS DEL MILENIO DE ESPAÑA

PNT Plan Nacional de Teledetección

IEPNB Inventario Español del Patrimonio Natural y de la Biodiversidad

GOBIERNO DE ESPAÑA · MINISTERIO DE AGRICULTURA, ALIMENTACIÓN Y MEDIO AMBIENTE

IDEE

Rediam

ideA

Sistema Cartográfico de Andalucía

Centro Informático Científico de Andalucía
CONSEJERÍA DE ECONOMÍA, INNOVACIÓN, CIENCIA Y EMPLEO

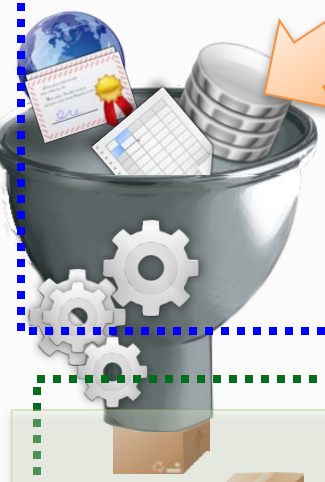
Instituto de Estadística y Cartografía de Andalucía
CONSEJERÍA DE ECONOMÍA, INNOVACIÓN, CIENCIA Y EMPLEO

Sistema de Información Geográfica de Identificación de Parcelas Agrícolas (SIGPAC)
Consejería de Agricultura y Pesca.Junta de Andalucía

Production, standardizing and dissemination all in one!!

Production

Gathering



Climate

Water

Geology

Environmental

Quality, Etc.

Topics

Junta de Andalucía

Associations

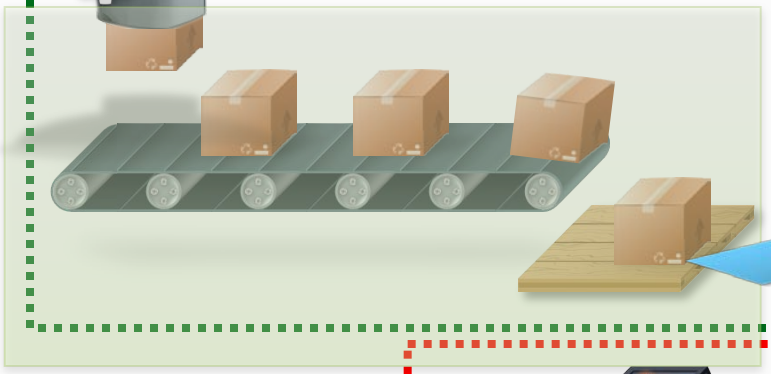
Local admins.

Companies

Universities, etc.

Producers

Standardizing



Storage

Dissemination

Added value

KINDRA (Knowledge INventory for hyDrogeology ReseArch)

Task 1.4

EUROPEAN INVENTORY for GROUNDWATER RESEARCH

“E.I.G.R”

- *Description*
- *What is a Geoportal?*
- *Recomendations*
- *Geonetwork*

TASK DESCRIPTION

Task 1.4. EIGR programming (REDIAM, LPRC)

1. ***Data Catalogue:*** *The catalogue must allow for searching, consulting and downloading the European hydrogeological information which has been collected and stored. The catalogue will contain the according metadata. This catalogue could be a "distributed catalogue" where all Data Providers can create and modify their own metadata.*

2. ***Definition of ETL tools:*** *Extract, Transform and Load*

3. ***Functions:*** *Query functions for data evaluation and the production of statistics, diagrams,…*

4. ***Web Services:*** *WMS, WFS, WCS, CSW, etc.,*

5. ***Viewer:*** *Client application that allows viewing Web Services by different users.,*

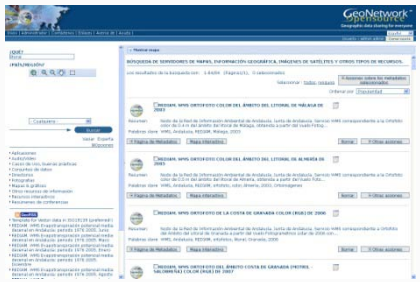
6. ***Regulation:*** *Set of rules, standards and guidelines to organize and structure information as well as the Geoportal.*

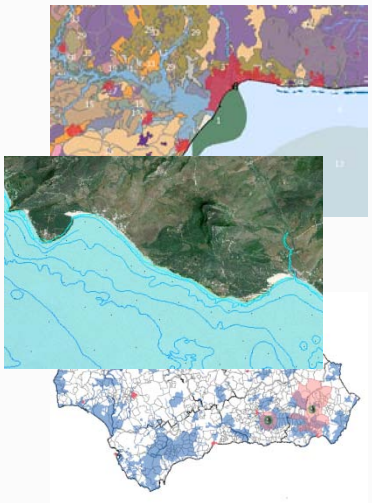
What is a Geoportal??

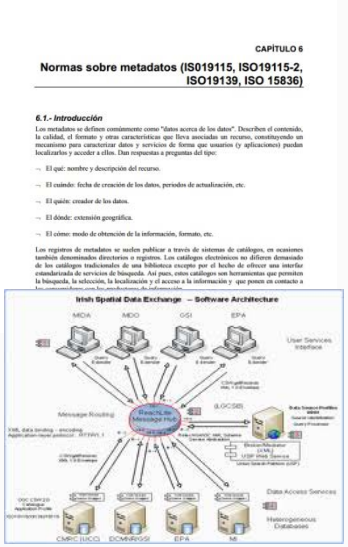
Geoportal → Internet Site, or equivalent, which allows the access to spatial data services (INSPIRE DIRECTIVE)

Geoportal

- **Data Catalogue**
- **Servicies**
- **Viewers**
- **Rules and Regulations**







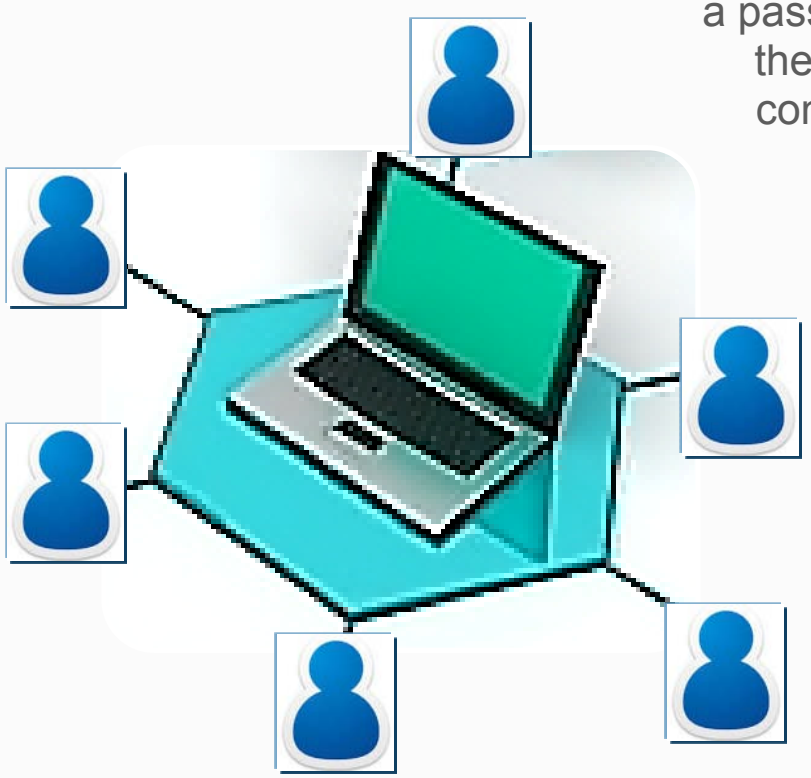
The Data Catalogue will house… the INFORMATION (Data) and its “data” (Metadata)

But what options are available?

Unified Data Catalogue

Distributed Data Catalogue

Unified Catalogue allows for:



Each User connects via web to the Geoportal to Upload and update their data, they have a user and a password assigned to them.(they must connect to the system and provide their data according to a concensed structure and templates they will find)

This allows for all the information to be centralised in one place and there exists Just one node of access

Inconvenients…..

The information management relies strictly on the service provider, who must Also maintain the existing metadata And this can easily overload the services at a given point

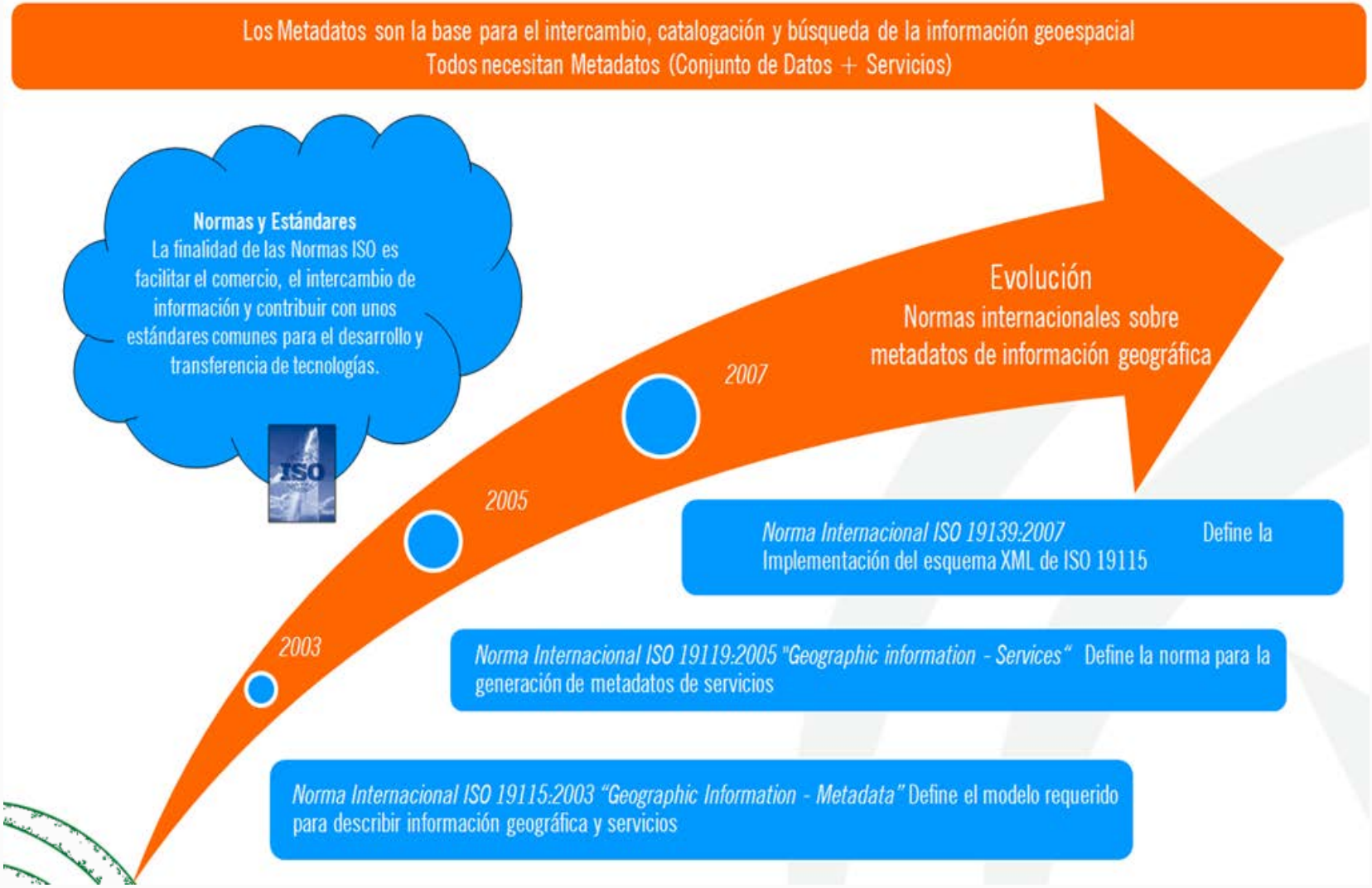
Distributed Catalogue allows for:

Each User is responsible for the information they provide, (they keep it upated, structured according to a concensed structure and their information is recollected by “harvesting”.

Inconvenient…..

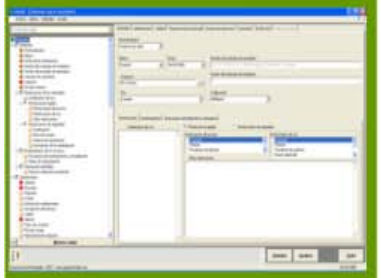
Each user must employ and have installed the same system

Metadata


Los Metadatos son la base para el intercambio, catalogación y búsqueda de la información geoespacial
Todos necesitan Metadatos (Conjunto de Datos + Servicios)
Normas y Estándares
La finalidad de las Normas ISO es facilitar el comercio, el intercambio de información y contribuir con unos estándares comunes para el desarrollo y transferencia de tecnologías.
ISO
Evolución
Normas internacionales sobre metadatos de información geográfica
2007
2005
2003
Norma Internacional ISO 19139:2007 Define la Implementación del esquema XML de ISO 19115
Norma Internacional ISO 19119:2005 "Geographic information - Services" Define la norma para la generación de metadatos de servicios
Norma Internacional ISO 19115:2003 "Geographic Information - Metadata" Define el modelo requerido para describir información geográfica y servicios

Metadata Editors

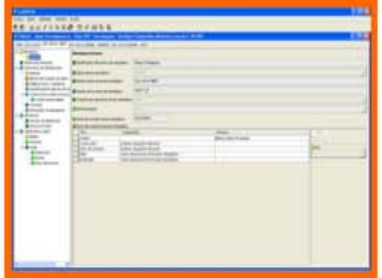
CatMedit



Consorcio TEIDE, Univ Jaume I,Zaragoza,..

http://sourceforge.net/projects/catmdedit/

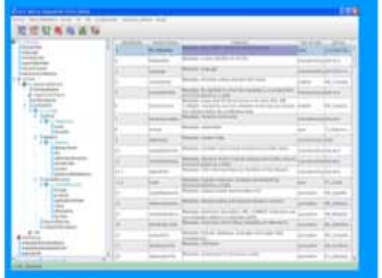
MetaD



Infraestructura de Datos Espaciales de Cataluña

http://www.geoportal-idec.cat/geoportal/cas/participar/publicar-metad/metad/index.jsp

Iso Metadata Editor (IME)



Instituto de Tecnología Aeroespacial

http://www.crepad.rcanaria.es/metadata/en/index_en.htm

Geonetwork

Food and Agriculture Organization (FAO)

http://geonetwork-opensource.org/

Herramientas Open source para crear y editar metadatos

Recommendations for the EIGR Geoportal

Self-Defined	The Geoportal must be recognized as a SDI resource based on standard and interoperable services and resources by means of keywords
Standard	Must follow at least the three following basic services: Viewer, catalogue and gazzeteer
Browsers	Must be compatible with the most extended browsers: Internet Explorer, Mozilla Firefox and Google Chrome
Multilingual	Must include at least an interface in English and in some of the other official languages.
Accessibility and usability	The accsess to the Geoportal must be free of charge, anonymous and open. We advise that no program installation must be required (plug-in). It must be easy to use and provide results
Identity	We recommend that all organizations which are responsible for the Geoportal must be declared and described
Feedback	The user must have a space available to express opinions and complaints (surveys, forums , blogs) as well as an contact email

Recommendations for the EIGR Geoportal

Name	The Geoportal's URL should contain the name of the project being developed
Three services	Must contain the three essential services: Web Map Services (WMS), Gazzetter and Catalogue Service (CSW). We recommend the implementation of a metadata catalogue service as well as a services catalogue service
Legal warnings	It must be clearly indicated which are the authors, autor rights, conditions of use, licenses as well as all the legal aspects linked to the use of the offered resources
Availability	One of the prioritary requirements of the Geoportal, the services, clients, web sites and components must all be available
Performance	A performance test should be run for all the web services, viewer (time used for loading), web site loading time as well as comparison tests against reference Geoportals
Good design	The graphical design of the interface must be attractive, estethic, effective, remarkable and must cause an impresión on users
Dissemination	A Geoportal needs to be mentioned and linked to as many other related sites as possible, it is advisable to account for a dissemination and communication strategy (communications, seminars, presentations,)

What is Geonetwork?

GeoNetwork is a Geographical Information Catalogue that provides services for enquiring, locating and downloading Geographical Information

Its main advantage is its simplicity: an easy to use interface, based on OGC open standards making information web transfer alot easier.

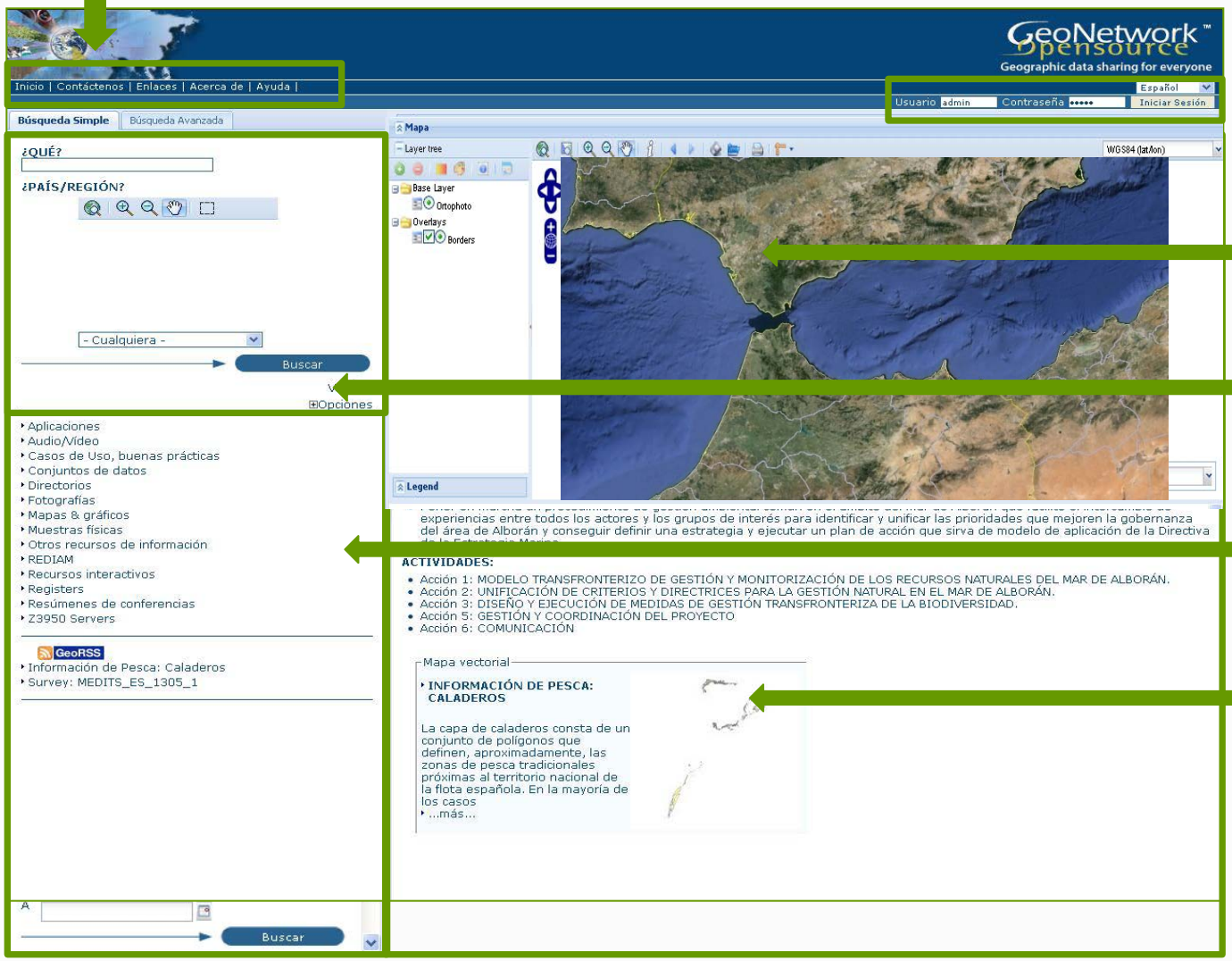
This makes working with decentralized catalogues, from different administrations and countries a plausible option.

FAO //GeoNetwork
[Find and analyze geo-spatial data]

Geonetwork Opensource is a project created and funded by the United Nations' Food and Agriculture Organization - FAO.

A quick overview of Geonetwork

Menu bar



User login and administration

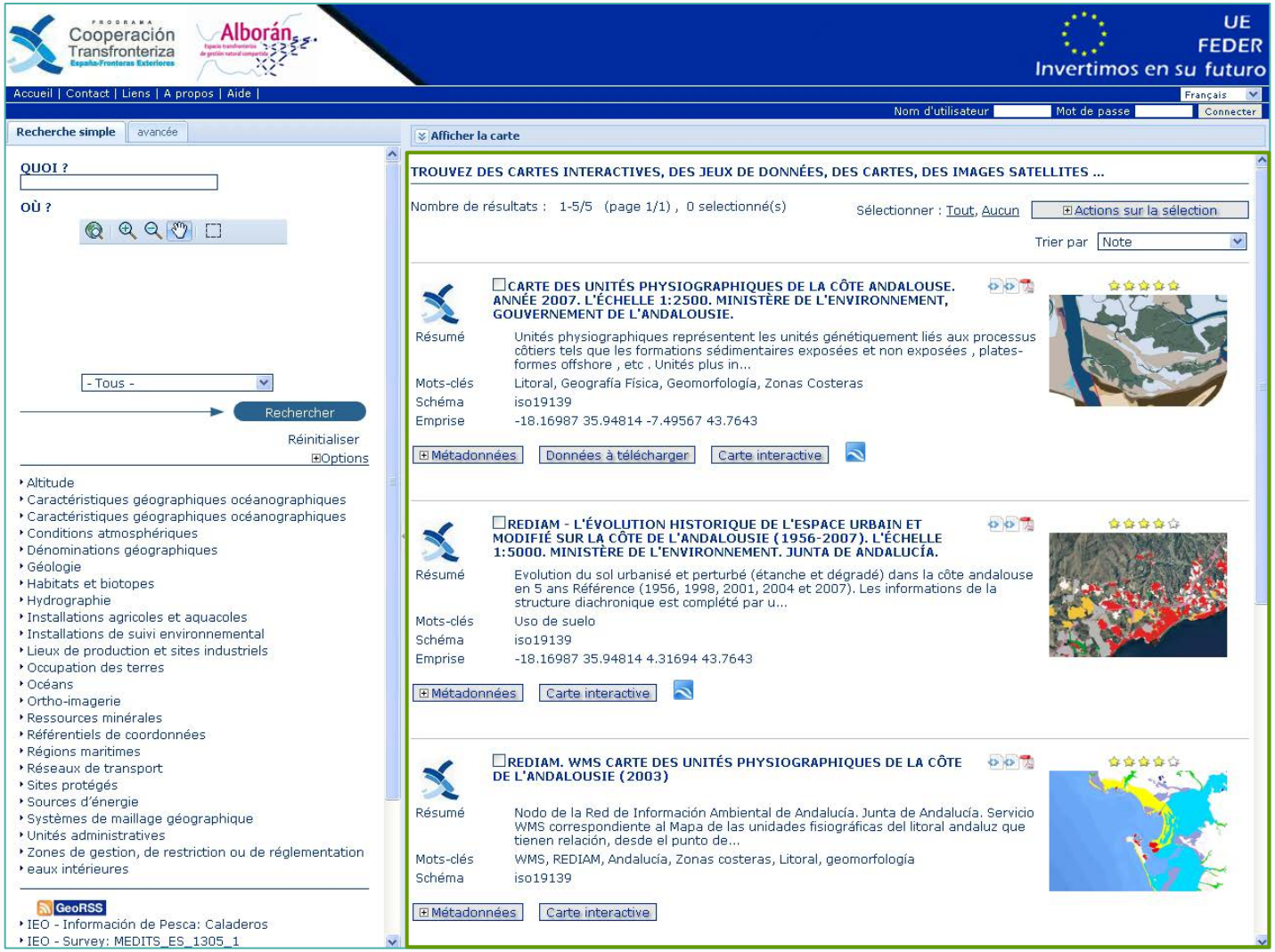
Location Map

Simple Information Search Tool

Advanced Information Search Tool

Results Window

Geonetwork components



Metadata Files from different organizations which are taking part in the same project

Geonetwork Metadata

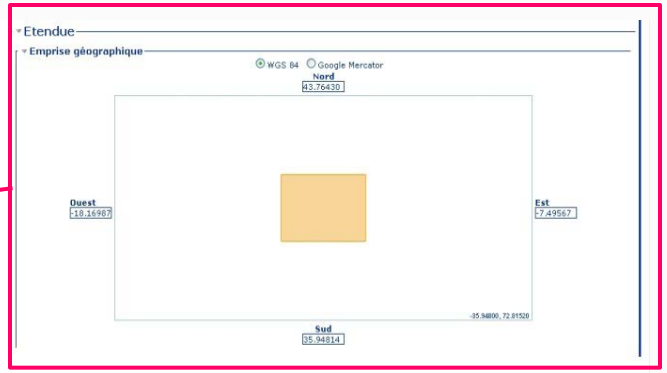
Metadata Summary

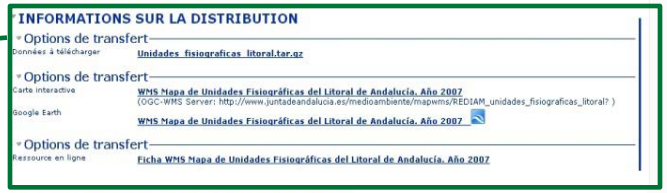
Identification Information

Distribution Information

Data Quality

Metadata Information





Geonetwork Catalogue Examples

International example

FAO Pilot Project on groundwater use for agricultural development in the Guadalquivir River Basin

http://data.fao.org/map?entryId=caec7b10-88fd-11da-a88f-000d939bc5d8

Geonetwork: http://www.fao.org/geonetwork/srv/en/main.home

National example

IDEE (Infraestructura de Datos Espaciales de España)

http://www.idee.es/csw-inspire-idee/srv/spa/main.home

IDEAGE (Infraestructura de Datos Espaciales de la Administración General del Estado)
http://www.ideage.es/csw-inspire-ideage/srv/spa/main.home

Summary

1. The EIGR will integrate **all of the European Groundwater Research knowledge available**, in a catalogue containing the greatest collection of groundwater data in various formats. Its purpose is to be the **Data Provider for a wide range of information networks** on a regional, national and international scale.

2. EIGR will be a **Shared Groundwater Information System** which will seek to continue integrating and managing further research and development information regarding groundwater topics.

3. EIGR will constitute a European knowledge ***eInfraestructure*** based on ICT and focusing on groundwater management, research and dissemination.

4. EIGR will be **production**, **standardization** and **dissemination** of groundwater research and development information, all in one.

Thank you very much!

www.juntadeandalucia.es/medioambiente/rediam

Rediam

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CONSEJERÍA DE MEDIO AMBIENTE
REGIONAL MINISTRY OF ENVIRONMENT

KINDRA

Knowledge Inventory for hydrogeology research

WP2 - Data collection and processing

KINDRA meeting in Rome 24-27/3 2015

Isabel Fernandez and Eva Hartai
European Federation of Geologists, EFG

WP2 - Data collection and processing - Objectives

- EU wide assessment of existing practical and scientific knowledge on hydrogeology related research and innovation in Europe
- Implementation with the involvement of EFG national member associations
- Using the developed classification system/data sources identified in WP1

WP2 - Data collection and processing

Tasks	Deliverables
2.1 Orientation workshop for national EFG representatives (EFG, SAPIENZA).	→ **D2.1** Orientation workshop for national EFG representatives. **(M12)**
2.2 National Workshops on Hydrogeology (EFG, SAPIENZA).	→ **D2.2** National Workshops on Hydrogeology **(M16-20)**
2.3 Data collection and processing (REDIAM, EFG, UM SAPIENZA, GEUS, LPRC)	→ **D2.3** Country Reports **(M24)** **D2.4** EIGR Datasheets and functionality report **(M24)**

WP2 – Description of work

Task2.1: Orientation workshop for EFG's national representatives (EFG, SAPIENZA).

D2.1: Orientation workshop for EFG's national representatives. Month 12

Tentative date: November 2015 in Brussels

According to a uniform terminology/standard (WP1, D1.3)

During the orientation workshop the Inventory will be tested, and written guidelines will be provided concerning the key steps in assessing research/innovation activities in a particular country.

WP2 – Description of work

Task 2.2: National Workshops on Hydrogeology (EFG, SAPIENZA)

D2.2: National Workshops on Hydrogeology. Month 20

Facilitate interaction among Stakeholders and come to a common understanding of the key research priorities in the particular country.

Two objectives:

- mapping the practical and scientific knowledge related to hydrogeology (already starts during the event)
- providing a platform for Stakeholder interaction, the dissemination of project objectives and facilitate national-level networking

WP2 – Description of work

Task 2.3 Data collection and processing

Based in the Task 1.2 Inventory of information sources

D1.4 In house-inventory of information sources, month 9

WP2 – Description of work

Task 2.3 Data collection and processing (REDIAM, EFG, UM SAPIENZA, GEUS, LPRC)

D2.3 Country Reports, Month 24

D2.4 EIGR Datasheets, Month 24

Hydrogeology-related knowledge will be reported in an online Inventory, open access for researchers and the public

EFG NAs and national representatives are involved

Information from consulting at national (regional ?) level the relevant reports and databases of:

- Universities
- Research centres
- Government bodies
- Territorial administrative offices
- Other parties involved in hydrogeology research including the private sector

WP2 – Description of work

Task 2.3 Data collection and processing (REDIAM, EFG, UM SAPIENZA, GEUS, LPRC)

Outcomes of this sub-task will allow direct comparison of hydrogeology related research and innovation activities, priorities and strategies from 20+ countries in Europe

WP2 – Data collection and processing

WP leader: EFG – 6 p/m
Duration: month 12-24

Participants:
SAPIENZA – 4 p/m
REDIAM – 4 p/m
LPRC – 1 p/m
UM – 6 p/m
GEUS – 3 p/m

EFG Third Parties – National Associations (20)

EFG Member Association	GA	EFG Agreement
Belgo-Luxembourg Union of Geologists Country: Belgium-Luxembourg	X	X
Croatian Geological Society (CGS) Country: Croatia	X	?
Czech Association of Economic Geologists Country: Czech Republic	X	Subcontracting
The Finnish Union of Environmental Professionals Country: Finland	X	X
French Geological Society Country: France	X	Scientific partner
Professional Association of German Geoscientists Country: Germany	X	Scientific partner
Association of Greek Geologists Country: Greece	X	Replaced
Hungarian Geological Society Country: Hungary	X	X
Institute of Geologists of Ireland Country: Ireland	X	X
Italian National Council of Geologists Country: Italy	X	X
Royal Geological and Mining Society of the Netherlands Country: The Netherlands	X	X
Polish Association of Minerals Asset Valuators Country: Poland	X	X
Portuguese Association of Geologists Country: Portugal	X	X
The National Association for Subsoil Use Auditing Country: Russia	X	Replaced
Serbian Geological Society Country: Serbia	X	X
Official Spanish Association of Professional Geologists Country: Spain	X	X
Geosection (Swedish Association of Scientists) Country: Sweden	X	Scientific partner
Swiss Association of Geologists Country: Switzerland	X	X
Ukrainian Association of Geologists Country: Ukraine	X	x
Geological Society of London Country: UK	X	X
Slovenian Geological Society, Slovenia		New partner
Danish Geological Society		Potential new partner

EFG agreement with Members

KINDRA – Basic activities (2015-2017):

- Gather national information concerning hydrogeology from diverse sources, such as government bodies, universities, research centres, regional authorities; and map existing practical and scientific knowledge, using KINDRA's Hydrogeological Research Classification System in English provided by EFG;
- Organise a national workshop on hydrogeology to discuss KINDRA outcomes;
- Issue annual reports on KINDRA's activities carried out written in English, discriminating the type of activity, its time/duration, outcomes, etc., using the template provided by EFG;
- When asked by EFG, submit to EFG and the European Commission financial reports concerning the costs incurred to implement KINDRA's tasks.

Thank you

GEUS

KINDRA –
Introduction to Work Package 3
Research gaps, trends and recommendations

Klaus Hinsby, Peter van der Keur and Maria di Cairano

Geological Survey of Denmark and Greenland
Danish Ministry of Climate, Energy and Building

Objectives

WP3 will **identify research gaps (and trends) in groundwater research** that have relevance for the implementation of the Water Framework and Groundwater Directives (WFD and GWD) including issues on groundwater-surface water interactions and climate change impact and adaptation.

Partner involvement
(alle partners are involved in WP3)

Work package number	3	Start Date or Starting Event			24	
Work package title	Research gaps and recommendations					
Participant number	1	2	3	4	5	6	
Short name of participant	SAPIENZA	EFG	REDIAM	LPRC	UM	GEUS	T
Person/months per participant:	4	5	2	2	4	9	26

WP3 Tasks

- **Task 3.1 Hydrogeology research evaluation (trends)** based on classification described in task 1.3 see next slide **(GEUS,** REDIAM, SAPIENZA**)**
- **Task 3.2 Research gaps (GEUS,** SAPIENZA, EFG, LPRC, UM**)**
- **Task 3.3 Recommendations (GEUS,** EFG, SAPIENZA**)**

Task 1.3 - SUMMARY (as input to WP3)

Task 1.3. Develop guidance for classification and reporting groundwater researches (GEUS, SAPIENZA, UM, EFG, LPRC, REDIAM)

A uniform EU-harmonised categorisation approach / terminology for reporting groundwater research **(a Hydrogeological Research Classification System – HRC-SYS)** is created Results of the previous tasks 1.1 and 1.2 will be used to provide an **EIGR (European Inventory on Groundwater Research)** guidance document for future classification and reporting groundwater research and innovation activities and results (D1.3).

The EIGR guidance document summarises the activity of WP1, based on the conclusions raised by the scientific partners, **taking into account recommendation provided by the JPE.**

The EIGR Guidance Document is used during the course of the project and for the orientation of **EFG Third Party representatives** and other experts involved in the review and compilation of research data under EIGR relevant for implementation of WFD and WGD

PROVIDE THE CLASSIFICATION SUPPORT FOR THE CLASSIFICATION OF GROUNDWATER RESEARCH GAPS IN WP3

Description and suggested approach - Task 3.1

- **Assessment of performance of key ongoing scientific activities** (EU, National, regional & international using the **HRC-SYS** (Task 1.3) & **EIGR** tools (WP1)

This is based for each activity on criteria developed in WP1
For: research products (e.g. tools, services etc); prototypes, Guidelines and technical deliverables; stakeholder involvement

Description and suggested approach - Task 3.2 (1/2)

- **Identification of research gaps** with the assistance of the **Joint Panel of Experts** from harmonized knowledge pool in Task 3.1 and identified research priorities

Description and suggested approach - Task 3.2 (2/2)

Water related research papers will be included with focus on e.g. Surface-groundwater interaction; groundwater-ecosystems (terrestial / aquatic); emerging contaminants; climate change; Shalegas exploration. Information is collected across research Projects, recommendations from position papers and from e.g. EIP, WssTP, and accounting for implementation of WFD & GWD

Obtained results will be processed to be used at EU level for Directive revisions; CIS Management Basins Plans; Monitoring Procedures (e.g. Blueprint documents)

Description and suggested approach - Task 3.3 (1/3)

- **Recommendations from identified research gaps**

Adressing further **development of policies & research Programmes**
Dev. of **recommendations for research and innovation**
For cost effective **monitoring** and **modelling** af groundwater-Surface water interaction and **groundwater dependent ecosystems**

Description and suggested approach - Task 3.3 (2/3)

Recommendations will relate specifically to:

- **Groundwater qualitative status**: nutrients, salinity, pesticides and emerging contaminants
- **Groundwater quantitative status**: eflows and water table decline (or rise)

Description and suggested approach - Task 3.3 (3/3)

Recommendations concern:

- Role of quantity and quality of groundwater to sustain human & ecosystem health, industrial & agricultural production (WFD & GWD related)
- Groundwater quantity and quality related to environmental objectives for terrestrial/aquatic ecosystems and subject to emerging contaminant pressures, climate change and future land use changes
- Water quality reporting, addressing identified knowledge/data gaps for groundwater threshold values (WFD & GWD)

Deliverables

- **Deliverables**
- D3.1 Draft synthesis of country reports (M28)
- D3.2 Workshop with the Joint Panel of Experts (M30)
- D3.3 Report on the identified gaps in research and innovation (M33)
- D3.4 Recommendations (M36)

KINDRA

Knowledge Inventory of hydrogeology research

KINDRA – GA 642047
Call: H2020-WATER-2014-one-stage
Type of action: CSA
WP4 – PROJECT DISSEMINATION AND COMMUNICATION
1st Workshop with the JPE, Rome Friday March 27

Adrienn Cseko, LPRC

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 642047

WP4 Dissemination and communication – overview

- **WP 4.1 Dissemination management**

  Communication Plan: *„Getting the right messages across in the right way"* (identification of target audiences and dissemination channels, key project outputs and KPIs etc.)

- **WP 4.2 Dissemination and support services**

  Creation of uniform project image (logo, templates, guidelines), production of media-kits and project brochures, web-site management

- **WP 4.3 Leveraging dissemination and dialogue**

  JPE Workshops to improve project outcome and to strengthen engagement with stakeholder groups

  Public outreach

The overall objective of this WP is to communicate the importance of groundwater and to create a more integrated community of researchers and users extending across disciplines, countries, organisations and sectors.

Tasks	Deliverables
4.1 Dissemination management (LPRC, EFG) →	**D4.1** Kick-off meeting (M1) √ **D4.2** D&C Plan (M3) √ **D4.5** Uniform project image (M3) √
4.2 Dissemination support services (LPRC, All partners) →	**D4.3** Project website (M3) √ **D4.6** Project brochure issue 1 (M4) √ **D4.8** Project brochure issue 2 (M12) **D4.10** Project brochure issue 3 (M24) **D4.13** Scientific papers and publications (M36)
4.3 Leveraging dissemination and dialogue (LPRC, All partners) →	**D4.4** First workshop with the JPE (M3) √ **D4.7** Report on end-user requirements (M6) **D4.9** Second Workshop with the JPE (M18) **D4.11** Third Workshop with the JPE (M30) **D4.12** Report on the implementation of public outreach (M36)

Results achieved

D4.5 Uniform project image (M3)
Project logo, templates, banners

D4.3 Project website (M3)
First simple version was set up in February 2015

D4.2 Dissemination and Communication Plan (M3)
Identification of target groups and dissemination channels

D4.4 First Workshop with the JPE (M3)
Rome, 26-27 March
Improving scientific content & advise about D&C

D4.6 Project brochure issue 1 (M4 to M12)
Draft copy is available; to be distributed in April 2015 at CIS-WG C and EGU meeting

D4.7 Report on end-user requirements (M6)
Upcoming…
Development of contact database and survey questions

D4.3 Project website (M3)

www.kindraproject.eu

- ✓ Horizontal support; „a resource portal and reference point”
- ✓ Open source software: WordPress theme
- ✓ First version was set up in February 2015 (M2)
- ✓ Very simple structure (4 menu points) + NEWS and Calendar
- ✓ Deliverables will be made available
- ✓ Linked to the inventory

Space for image

D4.2 Dissemination & Communication Plan (M3)

Audience	Communication objectives	Key Messages	Channels	Key outputs
Interest Groups	Similar approach on a global scale	Harmonisation aspects of KINDRA	Conferences Personal contacts IAH newsletters	WP1 EIGR Research G&R
Academic Staff	The potential to fuel future research	Call for of expertise for stock of recent results and for the definition of research gaps	Scientific papers Prof. associations GeoNews and IAH newsletters Project databases Social media	WP1 EIGR Research G&R
Associations representing industry	Further development and investment of research results	Commercial-innovation aspects; knowledge marketplace	Sectoral conferences, Specific journals Direct contacts	EIGR Synthesis CR Research G&R
Environmental NGOs	Developing Joint Awareness raising activities	Consultation on their identified priorities for water-related issues	Social Media Press releases Direct contacts	EIGR Synthesis CR Research G&R
Public bodies	Generate funding based on recommendations	Outlining new research directions	Press releases Direct contacts	EIGR Synthesis CR Research G&R

D4.6 First brochure M4 – M12 (draft)

The "water" topic represents a key-aspect of the modern society: water is not only necessary for human, biological and environmental requirements, but it is one basic "engine" of several interconnected research topics, as exemplified by the water-food-energy-climate nexus. Groundwater represents the "hidden" part of the water cycle, difficult to evaluate, communicate and appreciate, although it sustains the health of both humans and ecosystems as well as industrial and agricultural production. The KINDRA project intends to achieve a comprehensive understanding on the groundwater theme, by creating a "snapshot" of our scientific knowledge covering European Countries.

KINDRA (Knowledge Inventory for hidrogeology research, Grant Agreement No. 642047) is a project funded by the *European Commission's HORIZON2020 Framework Programme, call WATER-4a-2014 - Coordination and Support Action*

The KINDRA Partnership:

Project Coordinator: - Università Degli Studi di Roma la Sapienza, ITALY

EFG - Fédération Européenne Des Geologues, FRANCE

REDIAM - Agencia de Medio Ambiente y Agua de Andalucía, SPAIN

LPRC - La Palma Research Centre for Future Studies S.L., SPAIN

UM - Miskolci Egyetem, Faculty of Earth Science and Engineering, HUNGARY

GEUS - Geological Survey of Denmark and Greenland, DENMARK

European Commission

KINDRA

www.kindraproject.eu

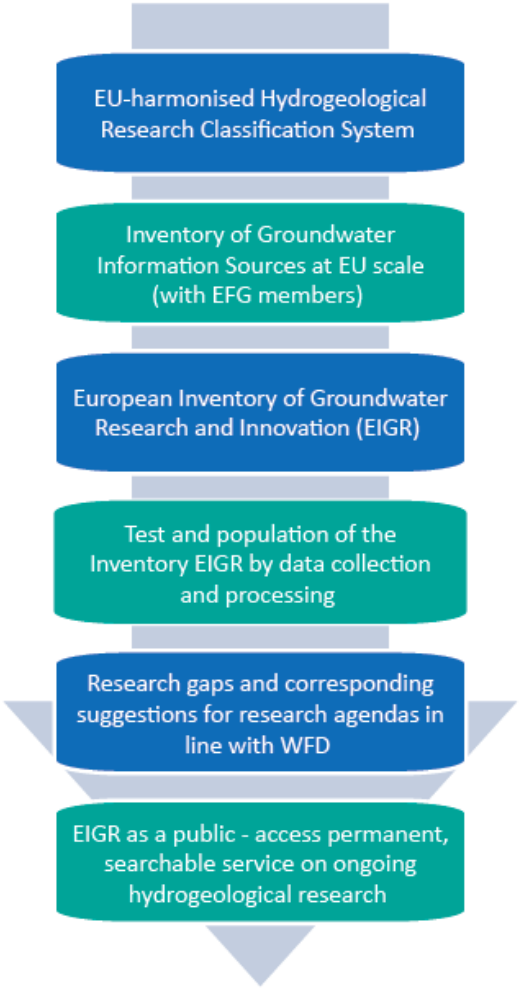
D4.6 First brochure M4 – M12 (draft)

Objective

Classification and inventory of groundwater researches

Practical and scientific knowledge related to hydrogeology research and innovation are scattered amongst various actors in Europe. The overall objective of KINDRA is to create an inventory of this groundwater knowledge-base, to be implemented following a new harmonized research classification system (HRC-SYS). It requires an accurate assessment of the state of the art in hydrogeology research in various geographical and geo-environmental settings, allowing for direct comparison and the exploitation of synergies.

This inventory will be implemented in a database (EIGR) on groundwater research results, activities, projects and programmes, deemed essential for the identification of the state-of-the-art, future perspectives, critical challenges and research gaps, allowing at EU scale the correct management and policy development of groundwater resources, in line with the implementation of the WFD. Based on the HRC-SYS, the Database EIGR will thus be deployed as a public-access service, to be used as a permanent, searchable database on ongoing hydrogeological research in Europe.



KINDRA www.kindraproject.eu

Dissemination

Make groundwater visible

Communicate groundwater importance is our priority, taking into account different audiences, represented by the technical and scientific community, the wide water stakeholder category and the general public. The involvement of the technical community is guaranteed by the European Federation of Geologists (EFG), whose national members are active collaborating along the project by a bi-directional approach, with the help of the Joint Panel of Expert, and collaboration with EU groundwater associations and working groups. Strategies for engaging stakeholders include differentiated and targeted communication approaches. Finally, public outreach activities will convert technical contents into materials for disseminating groundwater importance to the general public.

D4.7 Report on end-user requirements…upcoming (M6)

Methodology and Draft timeline

- Contact database

  Target numbers 200 replies; database of 400 contacts (with good coverage of the target audiences)

  Short questionnaire (8-10 questions only)

- Online, with the help of google survey…

  By phone at some cases

- Collection of data: 15 of April to 15 May
  Assessment and reporting: until 30 June 2015

Goal is to assess the needs and requirements of end-users;

Involvement of JPE in D&C activities

„Getting the right messages across in the right way”

- ✓ Building a „social network” for KINDRA
- ✓ Contribution to the development of the Contact database
- ✓ Advise about best and most efficient forms of communication methods towards reaching the different stakeholder groups

Thanks for coming

Have a nice day!

Knowledge Inventory for hydrogeology research

First JPE workshop
Rome, 26th-27th March 2015

12.00-12.15:

WP5 Project management

Gertruud van Leijen

Project organisation structure

- **Project Steering Committee**: decision-making body
- **Coordinator:** intermediary between the Parties and the Funding Authority; responsible for administrative duties at partnership level and overall coordination
- **Work Package leaders**: responsible for the coordination of Workpackages endeavouring the timely delivery of tasks and high-quality performance of the given WP. No formal decision capacity!
- **Joint Panel of Experts**: mobilise scientific knowledge for full consensus on matters that have a EU-level concern, and strengthen the Consortium's capacity in reaching out towards the stakeholders.

Workpackage 5 tasks

- **Task 5.1 Quality Assurance and Risk Management**
  - consortium agreement
  - develop and implement Quality Assurance plan
  - continuous risk assessment and management
- **Task 5.2 Project Coordination**
  - management of the administrative matters
  - administrative support to partners
  - scheduling and planning activities
  - internal project communication and external networking
- **Task 5.3 Project management**
  - direction of works by partners'
  - administrative/financial management
  - reporting
  - project management meetings
- **Task 5.4 Exploitation of results and IPR**
  - IPR management related to outcomes
  - establishing future sustainability of project outcomes

Project monitoring tools

- Quarterly activity reporting
- Half-yearly financial reporting
- Minutes of all meetings (physical and calls)
- File repository
- Weekly update by the Coordinator

Activities performed

Internal management

- Finalisation of Consortium Agreement details and signature
- Supply of financial ID sheets by partners to receive payment
- Payment of the first installment – some delay due to closure of financial year at Sapienza
- Assignment of the members of the SC by partners' legal representatives
- Contact list (with people's functions, proxies, technical and admin staff)
- Staff assignments, hiring external support (compliance consultant)
- Templates prepared (deliverables, minutes, quarterly reporting etc.)
- Quality Assurance Plan prepared and approved
- Partnership-wide meetings:
  - Kick off meeting 15th-16th of January 2015 – La Palma
  - Conference call 17th of February 2015
  - Conference call 12th of March 2015
  - SC meeting 24th-25th of March 2015

Activities performed

Partnership issues and contacts with EC and other projects

- **Linked third parties: 20 national affiliations of EFG**
  - formal procedures for validation
  - 3 preferred to renounce => search for substitutes
  - found in some members of International Association of Geologists
  - now: assessment on collaboration arrangements. Assessment with PO in course, amendment procedure foreseen.
  - amendment will have to include also correction of “unit costs” into “real costs” for linked third parties.
- **Meetings with EASME / PO / FO:**
  - EASME meetings on February 26th and March 18th -19th
  - PO and FO met on 26th by Coordinator and EFG (Marco and Isabel)
  - Formal approval on postponement of D4.9 from M12 to M18
- **Contacts established with other projects/networks**
  - Water4a projects, EIP water action groups, SPI researches, water networks (WssTP) etc.

D5.1 Quality Assurance Plan

What?

✓ offers support in implementation, systematic monitoring and evaluation of the project to ensure that standards of quality are being met

✓documents the necessary information required to effectively manage project quality from project planning to delivery.

✓Defines the project's quality policies & procedures, agreed working methods, responsibilities and authorities and planning.

D5.1 Quality Assurance Plan

Why is it important?

Compliance to quality standards, rules and procedures serve several goals, mainly:

- efficient project coordination
- clearness about tasks, obligations and rights, and their observance
- avoidance of incompliance with HORIZON2020 programme rules
- efficient project monitoring
- assurance of quality of project outputs

D5.1 Quality Assurance Plan

Definition

- Discussions initiated during kick off meeting 15-16th of January
- First draft A discussed in e-meeting of 12th of March 2015
- Second draft B discussed at SC meeting 24th-25th of March 2015
- Third draft C approved

D5.1 Quality Assurance Plan

Contents

Thanks for coming

Have a nice day!

Knowledge Inventory for hydrogeology research

KINDRA – 642047

Call: H2020-WATER-2014-one-stage

Type of action: CSA

SUMMARY/WRAP UP

Rome Workshop, Thursday March 27

Marco Petitta
Mariachiara Caschetto

Dipartimento di Scienze della Terra

Classification system and inventory: JPE suggestion/remarks 1/2

CLASSIFICATION

- ✓ Terminology has to be clear
- ✓ Classification has to be intended preliminary and would be updated during/after the project
- ✓ Topics, themes and activities have to be defined in detail
- ✓ Themes come first (and insert land use)
- ✓ Bottle water is a distinct industry
- ✓ Include dewatering, environmental impact assessment
- ✓ Themes can be named SECTORS, definition to be rephrased (“including social themes”)
- ✓ Establish relationships among categories
- ✓ Fields with few citations can be relevant or more relevant
- ✓ Other pieces of EU legislation to be accounted for (in addition to WFD and GWD)
- ✓ Looking for research results out of EU

AIMS AND FINAL USE OF THE PROJECT RESULTS

- ✓ Final results have to be tangible (“hardcopy”)
- ✓ Establish a baseline for future (for threshold values and trend)
- ✓ Bridge the gap between policy and research (SPI interface)
- ✓ Explain and identify the added value of the inventory, to characterize the project
- ✓ How to deal with direct questions from end-users, how they can use the inventory
- ✓ How to continue after the project

Classification system and inventory: JPE suggestion/remarks 2/2

INVENTORY TO BE POPULATED

- ✓Systematical review protocol to be adopted
- ✓Create filters for classification and also searches on the inventory
- ✓ How to evaluate the quality of the researches to be included
- ✓ Also data quality has to be addressed
- ✓ How to address non-geographical researches
- ✓ Establish a time-frame
- ✓ Establish a geographical unit as reference
- ✓ Bias introduced by the expert in charge of the inventory at national level (unconscious)
- ✓ 3D approach cannot be used for end-users, it has the simplest we can
- ✓ Glossary of keywords for searching (alphabetic ordered), user friendly and sensitive
- ✓ Training course for experts (before the workshop)
- ✓ Parameters to be included for searching have to be more than selected keywords

In-house inventory questionnaire: JPE suggestion/remarks

- ✓ an explanation page has to be included, side to the questionnaire
- ✓ these notes are necessary as guideline for compilation
- ✓ after each questions some lines for comments will be added
- ✓ the format would be excel or word

- ✓ Q2: add research/survey
- ✓ Q2: clarify “related with groundwater”;
- ✓ Q2: institutions can be more than 20, in this case it is a selection or add additional pages;
- ✓ Q6: monitoring points have to be named as “observation sites”
- ✓ Q2: add digital format
- ✓ Q3b: add a new question about “population served by groundwater”
- ✓ Q5: “bottle (mineral) waters”: evaluate if has to be included or not
- ✓ Q5: “those groundwater withdrawals”
- ✓ Q6: we refer to the “WFD monitoring”
- ✓ Q7: rephrase as “how much”
- ✓ Q7: what we intend for “covered” (no groundwater bodies?)
- ✓ Q8: add water level and/or spring discharge
- ✓Q9: change with “yes” or “not”; “in addition to the requirements”
- ✓ Q11: add journals/archives

Achieved results/agreements and to do list for JPE

✓ **classifications system**: agreement on three main categories
✓ names and definition of the main categories: Q1 for JPE (we will provide a draft)
✓ relationship among categories: two (topics and activities) are clearly interconnected
✓ the third (themes) can be directly compared or evaluated before/after the other two
✓ 2D classification (tree or matrices) or 3D (rubik cube) classification : Q2 for JPE
✓ both can be adopted for different scopes (3D for gaps/trend and 2D for end-users) Q3 for JPE
✓ agreement on selection of keywords from Web-of-Science and Google Scholar
✓ this is the priority at the moment

✓ **inventory**: aim of the inventory has been clarified (two scopes: gaps and end-users)
✓ what can be the geographical reference? How we can link research with geoportal? Q4 for JPE
✓ list of searchable parameters; JPE can provide input
✓ we have time to discuss how the inventory can be implemented

✓ **questionnaire**: amendments have been suggested, we will produce the final version soon

✓ **first leaflet:** to be approved today, your comments will be taken into account for final version to be printed and distributed in April

Your help is necessary for communication and dissemination: add your suggestions and possibly personal contacts

- IAH
- CIS WG C Groundwater
- ICT4water cluster http://ict4water.eu/
- EIP water partnership & marketplace (Action Groups) http://www.eip-water.eu/
- water JPI http://www.waterjpi.eu/
- Smart Cities http://www.smart-cities.eu/
- JRC water https://ec.europa.eu/jrc/en/research-topic/water
- EGU Hydrological sciences division
- H2020 WATER4A projects (5 projects: FREEWAT, WIDEST, WaterInnEU, BlueSCities)
- other FP7, LIFE+, other EU projects?
- to be completed…. suggestions?

Next steps for JPE

- Send us your receipts/boarding pass (Gertruud will contact you)
- “Digest” the project: presentations will be available soon on the Google drive section for JPE (Peter van der Keur will send you the access instructions)
- Provide answers to the main questions related to the classification system (we will send you before Easter if possible); we will fix a deadline (mid April?)
- Input/comments for the inventory are welcome
- An electronic meeting will be scheduled for April end/beginning of May, for updating you about results of the classification system
- November 2015: orientation workshop for third parties, Brussels; we will verify if it is possible to have an additional workshop with JPE at this date
- April/August 2016: national workshops; your help is welcome in your country
- June 2016: 2nd JPE workshop

THANK YOU FOR THE TIME YOU CAN DEDICATE TO OUR PROJECT!

Thanks for coming

Have a nice day!

6. DISCUSSIONS FOLLOWING THE PRESENTATIONS

6.1 Introduction to the KINDRA project: objectives, main activities, key expected results

Marco Petitta, Sapienza

No questions or discussions.

6.2 KINDRA from the perspective of the European Commission

Marie-Christine van Wunnik - EASME

Our project officer introduces herself and explains the (new) functions of EASME: the agency is charged with the evaluation of proposals, GA revision, monitoring of projects and payments concerning several funding programmes. It was created as EACI for implementing the Intelligent Energy Europe programme, operational since 2005, but after widening its tasks to several other programmes, since 2014 also parts of Horizon2020 have been assigned to EASME, amongst which the environmental Societal Challenge (n° 5). DG Environment though remains responsible for the design of the workprogramme. To assure that results of project implementation are taken into account in subsequent workprogrammes, EASME reports to DGs on the outcomes of programme implementation. To manage all these programmes, EASME staff, actually 200 persons, is being strongly increased and should reach 600 members by 2020.

KINDRA is amongst the very first H2020 projects managed by EASME. It has still been evaluated by DG Research, but since contract preparation it is managed by EASME.
The EC vision on KINDRA points at the following key elements of the project:

- focus on research results - the database should offer solutions/results (project databases do yet exist)
- linkages with WFD and GFD
- end-user involvement
- inter-operability/building on/linking with existing systems (e.g. EIP Water)

Mrs van Wunnik stresses the importance of informing EASME in case events are organised. Especially if major media impact is expected, it is very important to inform previously the agency as to permit it to prepare itself and to support project dissemination by her channels (art. 38 GA). Also she reminds the use of the EU emblem and credits to H2020 (Art38.1.2) in all publications. She advices to take notice of the Guide for communication in research and innovation.

Questions arise amongst participants on the financing of KINDRA exploitation after project's closure, especially as far as concerns the keeping into place of the database. JPE members call for a collaboration and EU support in finding opportunities for project outcomes sustainability. Though, EASME cannot have any function here as it is not within its mandate. Van Wunnik explains that partners should use the project duration to find funding opportunities and to lobby. EASME job is to launch it and to leave it to the market, project partners should find a solution for future sustainable exploitation. Petitta acknowledges that this makes it even more important to make the project successful, as to be able to attract investments to make activities continue beyond project life spam.
As far as the project's recommendations concern, Van Wunnik stresses that it is important to communicate with NCP about issues you consider omitted in workprogrammes, as to foster their inclusion. EASME's tasks are operative, not programming, but the project officer will do her best to communicate outcomes to DG Environment as to be taken into account in future programming.

6.3 WP1: Methodology framework development: objectives and foreseen activities

Peter van der Keur, GEUS

Questions and discussions referred to the round table sessions.

6.4 Initial proposal for a Harmonised Terminology and Methodology

Mariachiara Caschetto, Sapienza

It is observed by JPE members that the departure point of the presentation are EU projects but it would perhaps be better to start from peer-reviewed scientific literature worldwide: the best literature in the water resources area are from US, China, Canada and UK, moreover in many countries researches are financed by national excellence funding, and those projects have not been considered. Partners explain that European projects have been identified to find sources of previous classification systems and ontology in water research, as to be able to assess if they are usable and adoptable. The repository will however obviously be based on the literature.
Gesche Grützmacher would like to understand how regional and local data will be integrated, since hydrogeological data is very much interlinked with territories. This will be object of round table discussions.

6.5 Task 1.1 Harmonised Terminology and Methodology for classification and reporting hydrogeology-related research in Europe

Peter van der Keur, GEUS

Discussions are reported below in the round table on this issue.

6.6 Task 1.2 In-house inventory of information sources

Eva Hartai, EFG

Discussions are reported below in the round table on this issue.

6.7 Task 1.3 Guidance for classification and reporting groundwater researches and task 1.4 EIGR programming - objectives and foreseen activities

Clint García-Alibrandi, REDIAM

This presentation led to a lot of questions, some of which were later in the programme object of dedicated round table sessions (see below).
A central questions concerned how are quality requirements will be defined and safeguarded: will the inventory apply some kind of rating and what do you mean with indicators? (Alecos Demetriades)
Project partners answered that quality requirements are strictly related to the question of which information to include in the inventory and what not, that will be discussed later and is object of tasks 1.1 and 1.2. Relevancy of information will primarily be determined in terms of water framework and groundwater directive. Metadata should give information on quality and be aware that we are dealing with an inventory on research, not with a repository of data. The tool will offer links to sources of research. Teodora Szocs recomments to organise workshops for EFG members that will collaborate in populating the inventory as to explain them the standards, create a common understanding and so preserve a homogeneous quality level. Project partners explain that this is indeed foreseen.

6.8 WP2 Data collection and processing - objectives and activities

Isabel Fernandez, EFG

Isabel outlined as well the actual status of referees identification in the various countries. Some of the identified third parties of EFG association renounced and EFG is now searching for substitutes. This should be

all arranged within next two months as to allow for a single project amendment procedure. The referees will be engaged from end of 2015 onwards so there is sufficient time to arrange all this.
On a question about the tasks of these national organisations, Isabel explains that the national referee organisations should identify an expert to gather data/info; should organise a national workshop; and should be a channel for dissemination at national level. The selected expert should thus be qualified.
Quality of their work will be fostered by guidelines, standards and workshops and it is expected that national associations are the best suitable entities to identify competent experts in their country. Robert Ward warns for the risk of bias, as selecting a single national expert for the job his personal fields of expertise and preferences might influence his selection. Project partners are confident that indeed fore mentioned guidelines, standards and workshops, as well as keywords should be able to reduce this risk to the lowest possible level. No limitations will be applied to the date of the researches to be included in the inventory, as state-of-the-art practices not rarely are still based on old researches.
Robert Ward informs the group that in Great Britain there is review on research commissioned by the government to built evidence based policies upon. There is as well offered training to these subcontractors to learn how to avoid bias. KINDRA might take profit of their experiences and methods.
Robert Ward expresses the wish to be involved in the organisation of a workshop.

6.9 WP3 Research gaps and recommendations - objectives and activities

Peter van der Keur, GEUS

Robert Ward recommended to keep an open mind in focusing the gaps analyses and recommendations, taking into account new policy issues, new info, EU legislation still under development etc.
Georgia Destouni recommended to take also coastal groundwater into account, including carbon release into the sea as well as the air. She also reminds on urban hydrology and groundwater in permafrost regions. Apart from this so many sectors affect groundwater and should be duly considered, like agriculture, mining, geothermal energy. Lastly, the relation to climate change is an important issue.
Peter van der Keur confirmed that indeed all sectors will be considered.
It is moreover important to consider in the regulations also factors specific to the territory they apply to (example of outlawed chromium with a threshold impossible to be respected).
Teodora Szocs pointed at the problem that the definition of "groundwater" is so different in each MS, and asks the team how this will be faced.

6.10 WP4 Dissemination and communication, including end-user requirements

Adrienn Cseko, LPRC

Questions and discussions are reported under the round table item.

6.11 WP5 Project management - objectives, activities, status and results so far achieved

Gertruud van Leijen, Sapienza

IPR and open access are discussed. Under H2020 there is pilot on open access and KINDRA participates to it. By no means this implies that we are forced to make public every product produced in the project (IPR still stands). Participants agree on the importance and value of open access.

7. JPE ROUND TABLES AND DISCUSSIONS

7.1 JPE round table on Terminology and Classification

Aim of the discussion is to know from JPE members if they:
1) agree with the three categories proposed?

2) agree with the approach used to select the keywords
3) agree with the 3D approach
and to hear and assess their recommendations on these issues.

Contents and goal of the inventory and suitability of a 3D multi-dimension classification of keywords
The discussion is focused on the suitability of the proposed 3D classification and on the use that will or not be made of it by users.
For some participants 3D diagrams are difficult to grap. Several JPE members express their incomprehension on the definition of the three categories topics, themes and activities. They are not convinced on the usefulness of such complicated categorisation and acknowledge some overlaps between the categories. For example agriculture and forestry, classified as themes, can be considered sub-terms of land use, classified as an activity.
Project participants point out that the classification has a research and inventory design purpose, not so much a kind of "search tool". It is a way to order our knowledge on groundwater research. The cell-based structure it offers permits to assess quantity and quality of research on each combination of topic-theme-activity, and so to identify gaps and trends. Moreover, it can give a framework to find suitable keywords and to assess their relevance. Its output towards the user-interface may be a simple list of keyword.

The actually proposed terminology can be explained as follows:

- topics: terms related to hydrogeological researches.
- activities: what tools are used to arrive at certain results?
- themes: these are the policy terms, the political challenges. They cannot be considered topics in a scientific sense, because too broad.

In relation to this classification proposal, Georgia Destouni focusses the issue of "knowledge gap" and what to understand by it. Different stakeholders identify different knowledge gaps: some are effective research gaps, others evince lacking knowledge on existing research outcomes within bodies. So we have knowledge that exist but is not known due to lack of knowledge transfer, versus knowledge that doesn't exist yet.
Such differences might very well be discovered in this kind of 3D classification.

Difficulties to face are that that the project outcomes will have several types of end-users: public bodies/EC/citizens and researchers/experts, with different needs. Participants wonder if to this end not much more categories should be included, like f.e. drainage basins, country; relation with protected areas, ground water bodies, rock types, etc. Partners once again stress that such items will for sure be included in search keywords of the inventory, but that here we are discussing on the methodological tool where they are not felt necessary.
However, Georgia Destouni warns that there is a risk that for those people working in application fields who search an answer on a concrete question (f.e. how does groundwater affect aquatic or terrestrial environment as a carrier of nutrients and chemicals?) the inventory may not be resolutive as they look for a simplified comprehensive answer. At the same time, a researcher might prefer to go directly on the web searching in a science website.
Marco Petitta explains that the aim is not to create just another search engine. We wish to propose a classification scheme in order to assess which research exist and where are the gaps. In order to do this we need to schedule, and that info will be put at disposal to other users by means of the inventory published on the web and provided with suitable search tools.

The inventory will be filled with outcomes of research that will be searchable by multiple keywords. Objects are metadata: so information on where you can find the information that you are searching for: names of author, source, website, synthesis etc (meta data template has to be defined, still).

Primary goal though of the project is to make an inventory enabling us to identify research gaps. The "search engine" is an extra, to permit the largest use of the produced inventory. Thus, the classification should serve in first instance to understand WHAT IS MISSING. The selling point is that it permits to identify research gaps to direct future policy and research. The search options by keywords is a facilitation to find what one is looking for, but the basic classification behind the inventory should enable our primary aim.

After further email discussions, it seems that the 3D structure is considered a complicated but potentially very effective categorisation for identifying research gaps, while within the user interfaces to the inventory probably a 2D structure would be preferred being more easy to understand. Though, it should be assessed if this wouldn't complicate uselessly the work; good user instructions may as well permit application of the 3D approach in the user interface.

Source of keywords

Alecos Demetriades proposes not to permit end-users to define keywords, but to give them an extensive alphabetical glossary with as much keywords and versions of these keywords as possible. With that glossary analytical sections can be made for experts, that can indeed be multi-dimension as proposed in task 1.1.

Indeed, the project foresees that keywords are derived from policy documents (like directives) and literature, to which suggestions of expert and scientists will be added. In this exercise EFG members as well as JPE members will be involved. Their involvement is also crucial in finding gaps.

Crossing different statistics can help to include also topics that are not that “important” in terms on n° of researches or citations.

Kevin advises to consider as well words from hydrogeology dictionaries and points out that the list of keywords should be complete before launching the tool in the national workshops; if participants don't find their particular word they will lose confidence. Marco Petitta comforts him with the information that keywords will be identified by June while the inventory will be launched to be filled by end of the year.

Theodora Szocs points out the necessity to include as well USA and other non-EU research outcomes, as for example USDA findings. Marco Petitta assures that they will indeed be included by project partners.

The methodology for keywords identification is approved by JPE members.

Categories

Now it is clear that the primary purpose of the inventory is to find research gaps, and that its usefulness to other needs is only a secondary function it can fulfill, the discussion focusses on the suitability of the identified categories to indeed identify research gaps.

The impression of some JPE members is that "themes" is a parameter that is higher in hierarchy than the others, and the suggestion is done to go for a 2D approach taking off the themes, that can be handled as overarching topics. Another suggestion is to change the word into "sectors" and to not only include pressures but also needs. Though, project partners consider that the themes correspond to societal and environmental challenges as defined in policy documents and as such very relevant for the exercise to produce knowledge for policy development. Likewise, activities correspond to what should be done on the basis of technical evaluations and policy decisions.

It is felt by some people that some keywords might be relevant to more than one category.

Environmental impact assessment and geo-engineering should probably be included in "activities"?

Less clear is what is included under industry: does this include the use of water by industries? And what about bottled water? Producers of bottled water are huge users of water. What about engineering, dewatering at large industrial sites? Kevin Cullen stresses that such issues are very important for Environmental Impact Assessment. Project partners answer that indeed Industry includes all that kind of issues.

It is adviced to adopt and apply an effective systematic review protocol for population of the inventory.

In the end, it seems that the wordings "societal challenges", "research topics" and "technical actions" find consensus.

7.2 JPE contribution to the information sources

This debate focussed on improvement of the questionnaire that is aimed to be sent to EFG's national member associations to obtain their contributions in the mapping of the information sources for groundwater research at national level in 20 EU countries.

Several general recommendations are done:
- provide the people who have to complete them with some guidelines, especially on the used terminology (i.e. what is an "institution"?). This will be done on a separate page linked by notes to the questions.
- take into account that sometimes additional information can be useful to understand if the question has been understood well and to interprete the selected answer. Thereto, it is decided to add 2-3 lines after each questions allowing people to leave eventual comments.
- there will be an overlap between the answers provided in the questionnaire and official statistics. What if they are not in line?

The following suggestions were discussed on each of the questions:
1. How many institutions deal with groundwater research in your country?
2. Please fill the table for the institutions related to groundwater research in your country: (levels, types, accessibility)
In the definition of institution also include organisations doing surveys (not only research). Clarify if the term also includes agencies funding or commissioning groundwater research.
Clarify where to put the cross if an institution deals with research at more levels. Specify that data accessibility includes paper as well as online accessibility.

3. What percentage of the drinking water derives from groundwater in your country?
This questions posed several issues:
- The requested number is known to the EC, it is officially given by MS to EC. Partners explain that they wish to have direct information on this from an expert, to obtain statistical data. At the same time, we can verify with this question if the questionnaire is compiled correctly, as any expert should know this date.
- The answer may not give a good insight in the variations that exist in countries and that highly influence the importance of the figure. In particular the size of population is important. If in Spain only 30% of drinking water derives from groundwater, but in many cities it is 70%, than this is an important date?
Maybe it may help to add the question: what percentage of citizens drinks from groundwater?
Maybe it may help to ask for the standard deviation, or the average absolute deviation?
Eva Hartai and Isabel Fernandez though point out that the questionnaire must be easy to fill in as to get a fast answer. Furthermore this is only intended as first step.

4. Are there any official data about anthropogenic groundwater withdrawals?
5. If yes, please indicate those withdrawal types where data are accessible:
- Clarify which kind of withdrawals do you intend. Project partners point out that going into too much detail is not the aim of the questionnaire; the aim at this stage is to understand which kind of data are available and monitored to plan subsequent steps. JPE members though think that it would be more clear to indicate that bottled water is included under "industrial" or to add a separate option on this.

6. How many stations are there in your groundwater monitoring network/s?
- Clarify what you mean with "station". As not in all territories such stations are relevant, f.e. because there is no pressures due to low population, it may be better to add the answer option "no need to monitor".
- to clarify what you mean with networks, you may add in a note: "we refer to strategic monitoring for implementation of the Directives."

7. How large part of your country is covered by groundwater monitoring network/s?
- There is some doubts on the relevance of the answers to this question, as it depends highly on where/what is monitored and if such monitoring is necessary in the concerned area. Georgia Destouni suggests to rephrase the question into: "Do all groundwater bodies in your country have at least one monitoring point?" (the answer for Sweden is: no).

8. What type of data are collected by the groundwater monitoring network/s? (quantitative, qualitative or both)
- Clarify in a note what do you mean with quantitative (water level, spring discharge etc)
- However, monitoring networks should measure both quantitative and qualitative data, so the question will not give much info.

9. Are you aware of any parameters that are not presently monitored, but should be?
This is a very interesting question.
- the question might better be rephrased as follows: “Are you satisfied with the WFD monitoring parameters, or do you consider that there are parameters that are actually not monitored but should be?"

11. Are there any national journals focused on hydrogeology in your country?
12. If any, please list the names of these journals, indicating if they are on-line/printed (O/P) and English/national language (E/N) (add rows if necessary):
- It is suggested to broaden this question to open data archives (like in UK f.e. exist).

7.3 JPE contribution to KINDRA end-users requirements

Suggestions on stakeholders
Water suppliers are an important target group because composed mainly of engineers and less of hydrogeologist. So it is an important target group to reach as to achieve effective knowledge transfer. Of similar importance are:

- Eureau
- competent authorities
- representative associations and bodies (such as European petrol and fuel station association)
- European bottle water association
- research infrastructures related to hydrogeology (working on the ESFRI map development and national roadmap development)
- European national chapter (they can also help us to individuate further targets at national level)
- ENSA group (young people network on environmental issues)
- agricultural stakeholders
- young geologists
- young earth scientist network

A table with a list of stakeholders will be uploaded in Google drive in the forthcoming 3-4 weeks (in the dedicated JPE section) so JPE members can help to complete it. JPE members will be asked to provide eventual contact data they have, so to allow us to make an inventory of recipients.

Suggestions on channels
The following suggestions are done:
- Diffuse policy briefs aimed at decision makers and public bodies.
- Apart from the foreseen general leaflets in many languages for the general public, it would be nice to add booklets for school age children.

- For industries having to deal with groundwater issues – service stations, mining – a brief workshop at EU level specifically dedicated to them (i.e. for practitioners, non hydrogeologists) . Eva Hartai proposes that this workshop – at least part of it - could be merged with the forthcoming workshop to be organised in Brussels), although the target is quite different and it might be hard to merge them. The partnership will assess the possibilities.
- Don't forget Twitter and LinkedIn.

Brochure
The brochure, which latest draft had been diffused the day before amongst JPE members, is discussed. JPE members gave some contribution (written) to improve the brochures as asked yesterday. They mainly concerned editing and language, the content and structure is fully appreciated. The importance is pointed out to write in full the acronyms used (as in the case of WFD). Partners clarify that the brochure will be translated in the languages of the consortium partners.
The logo - that includes actually the horizon2020 emblem - will be replaced with the official one as provided by the project officer (only the EU flag).

Survey on end-users requirements
The survey (deliverable D4.7) is planned to be ready by end of June. It is proposed that each partner, adding possible contact list from JPE members, send the questionnaire to personal contacts as to maximize the possibility to get an answer.
Marco Petitta explains that target are not organisations: we do not expect official replies from institution (which might take a long time and require intermediate passages) but from individual persons (not “simple” citizens but people of the field, including academics, industry...). Other channels to be used to spread the questionnaire are forums, twitter, LinkedIn geology groups; smart cities community, the project website.
The questionnaire will be ready in 10 days, it will include 8 to 10 questions. It will be uploaded on Google drive and accessible for the experts to offer their comments.

Answers will be grouped according to the interest group the responders are part of.
It is suggested to distinguish amongst targeted researchers those within the hydrogeology field and those outside of it. This may offer interesting outcomes in terms of differences between their answers.
The questionnaire should be easy and fast to complete (like monkey survey, Google survey).

7.4 Summary of agreements/decisions

Marco Petitta presents an overview of JPE suggestions and remarks, grouping them into 4 macro themes: 1) classification; 2) aims and final use of project results; 3) inventory to be populated; in house inventory questionnaire (see slides). Some last comments and discussions occurred that were later taken up in email exchanges, on the basis of which project partners will base their final decisions.

<u>1) Classification:</u>

- The terms "themes" and "topics" continue to be source of confusion. By email we will discuss further best options for the terminology to be handled.
- Themes: add to health “& safety”
- Add amongst keywords: geology; standard; geothermal; contamination; risk.
- Suggestion: use always the singular (never the plural)
- If it would be decided to change the term "themes" in “societal challenges“ then maybe also the keywords have to be expressed as to express a challenge.
- For the methodology to identify keywords you may use Google scholar + directive WFD and GWD; other pieces of evidence like technical reports could be used as well.

- Grey literature in national languages represent a barrier in the keywords classification. Georgia Destouni proposes not to include grey literature as to avoid to include works which were not peer reviewed

All comments will be considered in the finalisation of deliverable 1.1 and in the preparation for the subsequent final version of the classification system to be released by end of June. Both documents will be shared with the JPE.

2) aims and final use of project results

- Elisabetta Preziosi stresses that it is important not to overlap with official sources and instead to point out the extra information KINDRA is able to provide. It may be useful to add links to the official existing monitoring networks which only partly are linked into the European system.
- The focus on end users is certainly a priority, how to meet at best their requirements is still open discussion. It is suggested to add a question in the questionnaire to end-users, like: “what would you expect from KINDRA, which info do you expect to find?"

3) inventory to be populated

- Robert Ward proposes to apply an existing systematic review protocols, to assess its procedures on their suitbility for KINDRA inventory. He will send more information on this.
- It should be assessed how to address non geographical research results in the inventory . The best way would be to consider groundwater bodies but this is hardly feasible because they are defined nationally. EU has only classification for surface waters. A solution can be districts, actually used at EU level as geographical unit, or river catchment, river basins.
- Training courses to the experts who will have to populate the inventory will be started with an online training using the November workshops as end point.

Some final comments on the questionnaires to be distributed amongst national EFG referees:
Question 2: a different box for the website would be advisable. In case institutions are more than 20 it is important to have them listed all, eventually on an additional sheet. Instead of data it might be preferable to use the word "information " in the last column.
Question 5: add coring/mining – recreational use (e.g. golf field, parks)
Question 7: better to rephrase the question as: “what proportion of groundwater bodies of your country has groundwater monitoring”. Also a preliminary question on how many networks a country has maybe useful. It is adviced to revise the range, using 90% instead of 100%.

The JPE has no additional comments or remark on the questionnaire

8. RESULTS ACHIEVED, WRAP-UP AND NEXT STEPS FOR JPE INVOLVEMENT

Marco Petitta presents a slide with an overview of the achieved results, in which are highlighted in red 4 brief questions which will be sent to the JPE for eventual additional remarks:

- ✓ **classifications system**: agreement on three main categories
- ✓ names and definition of the main categories: Q1 for JPE (we will provide a draft)
- ✓ relationship among categories: two (topics and activities) are clearly interconnected
- ✓ the third (themes) can be directly compared or evaluated before/after the other two
- ✓ 2D classification (tree or matrices) or 3D (rubik cube) classification : Q2 for JPE
- ✓ both can be adopted for different scopes (3D for gaps/trend and 2D for end-users) Q3 for JPE
- ✓ agreement on selection of keywords from Web-of-Science and Google Scholar
- ✓ this is the priority at the moment

- ✓ **inventory**: aim of the inventory has been clarified (two scopes: gaps and end-users)
- ✓ what can be the geographical reference? How we can link research with geoportal? Q4 for JPE
- ✓ list of searchable parameters; JPE can provide input
- ✓ we have time to discuss how the inventory can be implemented

- ✓ **questionnaire**: amendments have been suggested, we will produce the final version soon

- ✓ **first leaflet:** to be approved today, your comments will be taken into account for final version to be printed and distributed in April

JPE members are asked to provide further contacts and suggestion to enlarge the recipients of KINDRA C&D activities. A list of networks/groups/projects is shown, with two questions to JPE members:
- please indicate if you have personal contacts within these groups that could be used to reach them
- please supply any other network/group/project that you know and that we didn't foresee so far on our list.
JPE members will receive briefly an excel file in which to insert these kind of information.
Some suggestions are done immediately: Danube region strategy; WSSDP platform, UNESCO (Alice Aureli); EHP; EEA.

Further activities asked from JPE members are:
- Collect your receipts and send a travel declaration to the Department administration in order to get reimbursed your expenses (coordinate with Gertruud van Leijen)
- Please reply by mid april to the 4 above mentioned questions
- Please supply your contacts in support of KINDRA communication activities
- Please give your feedback to the end-users questionnaire and to Deliverable 1.1 that you will receive shortly

From our side:
- We intend to organise a follow-up e-meeting by the beginning of May (done on May 5).
- we establish a calendar for the next meetings with JPE. The next one is intended to be organised jointly with the orientation workshop next November, and will take place just before or after it.

9. PICTURES OF THE WORKSHOP

A selection of pictures is hereafter reproduced to give an impression of the workshop and its participants.

Pictures of the 1st Workshop with the Joint Panel of Experts of the KINDRA project

Rome, 26th - 27th March 2015

Picture of the group at the entrance of the Earth Science building of University of Rome Sapienza

Welcome dinner at Casa dell'Aviatore

The meeting room and the audience

Workshop chair and project leader Marco Petitta, University of Rome Sapienza

Presentation by Mariachiara Caschetto, University of Rome Sapienza

JPE members José Martins Carvalho, Alecos Demetriades, Elisabetta Preziosi
Sapienza's Mariachiara Caschetto

Presentation by Clint García-Alibrandi, Environmental and Water Agency of Andalusia (REDIAM)

Presentation by Isabel Fernandez, European Federation of Geologists

The rumi-cube explained by Mariachiara Caschetto, University of Rome Sapienza

Presentation by Eva Hartai, European Federation of Geologists

Intervention of JPE member Gesche Grützmacher

Intervention of Kevin Cullen

Intervention of Elisabetta Preziosi

Intervention of JPE member Robert Ward

Presentation of Peter van der Keur, Geological Survey of Denmark and Greenland

Presentation by Adrienn Cseko, La Palma Research Centre

Intervention of JPE member Robert Ward; at the left Peter van der Keur, Geus; at the right JPE member Gesche Grützmacher

Audience

Lunch in the mineralogy museum of the Department of Earth Science